ANDRUS CENTER FOR PUBLIC POLICY

PRESENTS:

SEARCHING FOR SOLUTIONS: SOLVING THE BULL TROUT PUZZLE

A SCIENCE AND POLICY CONFERENCE

JUNE 1-2, 1995

BOISE STATE UNIVERSITY

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OPENING LUNCHEON

Speaker: The Honorable Marc Racicot, Governor of Montana

Chairman Cecil D. Andrus: Good afternoon, ladies and gentlemen. Thank you very much for your attendance. I would like to express my appreciation to all of the panelists and all of the participants and spectators for your involvement and for being here to help bring about a resolution to this puzzle pertaining to the bull trout in the western United States.

Before I do that, if you look at this program, it shows that George Frampton, who is the Assistant Secretary for Fish, Wildlife, and Parks in the U. S. Department of the Interior, is scheduled to make introductory remarks in the next room after we have our luncheon speaker, the Governor of Montana. Well, I was pre-empted. Not this time by Governor Batt or any of his colleagues, but by the President of the United States. George Frampton called me yesterday, saying that the President had insisted that he be part of the entourage in Montana. Now, they found out somehow that Governor Racicot of Montana was going to be here in Idaho, so the Democrats in Washington tried to slip in the back door to take over that state while you were gone. I understand also that you have your airplane out here, and it's kind of sitting there idling and ready to get back and glue it all back together. Anyway, George Frampton could not be with us, but his director, Mike Spear, will make introductory remarks instead. He will make the comments that George was prepared to make at the beginning of the next panel. Dr. Freemuth, who is here with us today, is the head of that panel and will put that panel in motion in the next room after the conclusion of our luncheon speaker.

We have a special treat at noon today. We have the Governor of the state of Montana, who is going to speak to us. He is a native of Montana. Marc Racicot's family came to Montana when it was still a territory in the 1860s. He grew up and was educated there. I might point out that his high school basketball team has won one state championship—when he was the star player. He went on to be not only a leader in athletics, both in high school and college, but also, during his college years, to be president of the student body. What really caught my attention, Governor, was that as you were playing basketball at the college, you set a record that has yet to be broken—32 assists in one game. Why would that be important to me? Because we need your assistance today. I hope that you pass the ball off to all of these people so that we score as we should in the resolution of the bull trout problems that we face. The Governor went on to graduate from law school in 1976. He was also an R.O.T.C. student at the university, and therefore he completed his military obligation, served overseas with the military as legal counsel, came back and served as prosecuting attorney in the state of Montana, was elected Governor in 1992, and is an outstanding new member of the freshman class of Governors of America. His approval rating is running up in the mid to high seventies. I tried to squeeze the exact number out of him a while ago, and he gave me that "Aw, shucks" country-boy routine and passed the ball back. He has enjoyed phenomenal success as the chief executive of the state of Montana. Let me present to you the governor of the great state of Montana, a man who has faced adversity in the political arena and in the natural resource area and a person who is prepared to share with you his feelings as they pertain to the bull trout conference that we have here today. The Governor of the great state of Montana—Marc Racicot.

Governor Marc Racicot: Thank you for that kind introduction, and I am grateful to have the opportunity to discuss the issue of bull trout recovery, an issue that has clearly grown in intensity, in scope, in breadth, in risks, and in opportunity.

I am honored to participate with Cecil Andrus and the Andrus Center for Public Policy. Governor Andrus will be in Montana later this month for some fishing...and the outfitters who will accompany him and Montana's fish have been dutifully warned about the governor's proficiency with a fly rod.

Inevitably, the best place to start a discussion like this is in the beginning. In 1992, while I campaigned for the honor of serving as governor in Montana, the words "bull trout" were never mentioned. The word "bull" perhaps surfaced on occasion, but it was never followed by the word "trout."

Now, three years later, a day in the governor's office seldom passes without a discussion—or a debate—about bull trout, without a newspaper article written—and read—about bull trout, without a meeting on bull trout, without progress on bull trout recovery, or speculation about federal bull trout decisions.

Such an interest in bull trout did not happen by accident. For the next fifteen minutes or so, I'd like to tell you about bull trout recovery efforts in Montana. I'd like to discuss who is working on the recovery, how the recovery plan is designed to work, what is being done to help recover bull trout, and perhaps most important, why the recovery plan is being developed.

Again, let's start in the beginning. In October of 1991, our Department of Fish, Wildlife & Parks contracted for the preparation of a status report on bull trout populations in Montana. The report concluded that bull trout were found in less than half the stream reaches where they used to be found and that most of the existing bull trout populations in Montana were at risk. In October of 1992, essentially using the information compiled by the Department of Fish, Wildlife & Parks, a trio of environmental organizations filed a petition to seek protection for bull trout under the Endangered Species Act. There can be no doubt the petition to list the bull trout served as a warning to Montana. The warning was this: if we in Montana don't carefully and success-

fully manage our native fish, the federal government will do it for us. I believe states which either surrender or lose their native fish stewardship responsibility will soon, in essence, no longer have departments of fish and wildlife, but will in reality have departments of hunting and hatcheries. In Montana, we intend to avoid that.

So, throughout 1993, a small core group of Montanans developed an idea for a bull trout action plan. The official first step was in December of 1993, with the Governor's Bull Trout Roundtable Conference in Missoula.

The Bull Trout Roundtable provided an opportunity for state, federal, and private managers of wildlife, water, and land resources in Montana to discuss the possibility of collaborating—actually working together—toward the voluntary construction of a cooperative and comprehensive bull trout restoration plan.

I believed then—and continue to believe now—that there is great opportunity in a collaborative process. It involved Montana natural resource agencies in conjunction with real-life Montana citizens interested in bull trout. Its basis was that they—we—can and should develop a cooperative bull trout recovery plan that protects, maintains, and enhances bull trout populations without undoing Western Montana's economy.

It would be inappropriate and unwise to dismiss the societal and economic aspects of this plan. I'll discuss these impacts in a moment.

But to digress a minute, I should add that I have witnessed and participated in the painful and mostly fruitless contortions associated with Columbia River salmon recovery, and I wanted to avoid the grand posturing and empty rhetoric which has plagued that process. A process, I should add, notable for its lack of meaningful state involvement and notable for its impacts on Montana's bull trout. Rather than intolerant ramblings about whose governmental mission is more important or whose science is more refined or whose motives are most pure, for bull trout we wanted to build a fish restoration plan for Montana by Montanans.

We knew, whether the bull trout was listed or not, that our plan must meet the mandates contained within the Endangered Species Act. Our premise for action is simple and driven by common sense: we recognize the bull trout is in need of special management, and Montanans can and should design and implement the framework for this special management.

The general consensus of the Roundtable was that a collaborative plan was not only possible but preferred. So we worked to establish a charter group to serve as the Montana Bull Trout Restoration Team. There are nine entities serving on the charter group. They are the Montana Department of Fish, Wildlife, & Parks; the Montana Department of State Lands; the U. S. Forest Service; the U. S. Fish & Wildlife Service; Plum Creek Timber Company; the Confederated Salish & Kootenai Tribes; Bonneville Power Administration; the Montana Chapter of the American Fisheries Society; and the Montana Wildlife Federation.

The state and federal agencies clearly have water, wildlife, and land management authority critical to bull trout restoration efforts. Plum Creek owns thousands of acres of important bull trout habitat. The American Fisheries Society, with its diverse membership of fisheries biologists along with its technical abilities, helps serve as a peer review entity as well as offering positive advice in the construction of the plan itself. The National Wildlife Federation has lengthy experience in Montana wildlife restoration issues.

Our thinking was to keep the group to a size that was large enough to include the essential representatives needed to create a comprehensive plan but small enough to be an efficient and effective working group that could move forward and actually get something positive done on the ground in a timely fashion.

With only nine members signing the charter, it is clear the Restoration Team does not and cannot contain everyone with an interest in bull trout restoration. For those entities, our pledge was simple: we promise there will be many opportunities for individuals and interests to shape the restoration plan. Abundant public involvement will be available at every meeting, opportunities to comment on development of the plan will be available at every stage, and nothing will be implemented without the involvement of local residents in affected watersheds.

Thus far, to my knowledge, no other wildlife or natural resource issue in Montana has been approached in as open and as public a fashion as the development of this bull trout restoration plan.

Our bottom line is this: anyone who wants to be involved in the development of the plan has an open invitation to become involved and stay involved.

I fully realize that other approaches are available and that some may believe our dedication to public involvement is expensive, wasteful, foolish, possible even counterproductive. We think the opposite. The best way, if not the only way, for us to accomplish our goal is through a collaborative plan that Montanans can embrace and possess. Remember our goal is the voluntary completion of a scientifically-sound, procedurally-possible, and publicly-acceptable plan that will restore and enhance bull trout populations throughout its historic range in Montana. Our goal is not an academic report or a set of state recommendations. Our goal is to construct specific on-the-ground changes in specific river corridors. We are not—I repeat, not—involved in this for the entertainment value of the exercise or for abstract or theoretical purposes.

The "who" is working on bull trout restoration in Montana...as I just discussed...naturally blends into the "how" we are building the restoration plan itself.

In addition to a signed charter and a cooperative commitment to this project, the initial Restoration Team action step was the appointment of a Scientific Group. The mission of the Scientific Group is to produce the scientific basis for developing specific bull trout watershed restoration plans.

Here's a quick rundown of the Scientific Group's accomplishments in the past year or so. They have focused on the threats to bull trout and possible recovery strategies in the twelve specific watersheds that constitute virtually the entire range of the bull trout. The Scientific Group has also done extensive work on three key components of restoration plans: removal and suppression of non-native species, such as lake trout and brook trout; land management guidelines and standards for activities such a logging and grazing; and a thorough examination of the role of hatcheries in bull trout restoration.

The Scientific Group's dedication to this project has been impressive, appreciated, and beneficial. Tom Weaver, a biologist with our Department of Fish, Wildlife & Parks has more experience with bull trout than anyone in Montana. It has been suggested that Tom is on a first-name basis with every bull trout in the state. Tom is a member of the Scientific Group, and his work

is greatly appreciated.

Certainly much work remains to be done. But the scientific knowledge and scientific foundation for the restoration plan continues to grow, and with that growth comes enhanced opportunity for success and increased bull trout numbers.

But the best science in the world exists as mere information until it is applied. Our bull trout science will be applied by watershed groups, with help from the Bull Trout Restoration Team and others. A scientific box of tools is being developed by the Roundtable and Scientific Group, and, like master carpenters, watershed groups will use the proper tools in the proper fashion for the proper result. The solutions to bull trout restoration are as diverse as the threats to bull trout populations:

-Eradication of non-native fish.
-Augmented stream flows.
-Improved grazing practices and protected riparian areas.
-Access restrictions to bull trout spawning areas.
-Reduced or eliminated "take" of bull trout.
-Improved public information.
-Citizen "anti-poaching" groups.
-Improved forest practices.
-Stepped-up presence-absence surveys.
-Modified hydropower management.
-Land exchanges.
-Improved fish identification information to anglers.

The more site-specific the solution, the better the chance of success. The more site-specific the discussion, the better the chance of last success. Keep in mind the basis for this plan is voluntary. We are not building a government plan. Montanans are developing a bull trout plan.

We admit this entire concept is experimental and that there is no guarantee for success. It is possible a watershed group may decide bull trout aren't all that important, after all. It is possible a watershed group will fail, despite best intentions, to develop a local bull trout plan. It is possible voluntary restoration plans may need added legal enforcement. It is possible someone will suggest—in fact someone has suggested—that our bull trout efforts are part of a United Nations scheme to bring us all under one world government.

But I am convinced that people working in good faith and with honest purpose will put self-interest aside and develop consensus proposals. I have so much confidence in our bull trout process and the commitment from Montanans that I have volunteered to sign a habitat conservation agreement with the Secretary of Interior.

While the watershed groups play the central role in bull trout restoration, they do not play the only role. This brings me to the "what" Montana is doing to restore bull trout.

Here are half a dozen examples of specific action steps that would not have been taken without the Restoration Team's recommendation or restoration process.

The Montana Department of State Lands has voluntarily agreed to suspend all harvest of timber within Streamside Management Zones (SMZ) on state lands unless a fisheries biologist report indicates the harvest will not impair bull trout habitat or populations.

The Montana Fish, Wildlife & Parks Commission approved an emergency angling closure on the taking of bull trout from Hungry Horse Reservoir. The Montana Department of Fish, Wildlife & Parks is producing a comprehensive public information campaign designed to accomplish a multitude of important tasks: to increase fish identification in order to decrease incidental take of bull trout, to build improved respect for the bull trout, to provide information about the inherent responsibilities we as Montanans have in managing native species, to provide education on the importance of the Restoration Team and watershed restoration plans, and to provide a larger understanding about the special needs and unique attributes of the bull trout.

And the recent session of the Montana State Legislature passed bills that increase the penalties for bull trout poaching, prohibit the transport of certain live fish, and enhance the Department's ability to inspect private fish ponds. All these new laws will help to curtail the illegal take of bull trout and the spread of exotic fish, and I remain convinced these laws would not have been approved without the background work of the Bull Trout Restoration Team. In addition, an historic instream flow protection bill passed the Legislature, one that greatly expands the ability of Montanans to protect stream flows necessary to protect fish and aquatic life.

Clearly, much work has been accomplished in Montana toward restoration of bull trout. Just as clearly, much more work needs to be done.

The importance of this work brings me to the final chapter of my discussion—the "why" of bull trout restoration. Why has the state of Montana undertaken this colossal experiment and perched itself on such a narrow, risky, wildlife management limb?

Bull trout restoration does not depend on the Endangered Species Act, but an answer to the question starts there.

We have heard a great deal of debate about whether or not the bull trout should be added to the Endangered Species List. Rather than wade into that debate with our own expert opinion, the state of Montana has focused its energy, its money, its attention, and its commitment on actually putting a plan on the ground that restores the fish. That is still our focus. That will remain our focus.

It is wrong, I believe, to take a political problem-solving approach to scientific problems such as wildlife management. Decisions on which species should receive protection under the Act should be scientific decisions, driven by wildlife managers, not political decisions made by Congress or governors. But the Act, after reauthorization, absolutely must become flexible enough to allow states an ability to play a meaningful and productive role in every aspect of a listing decision. We deserve that right, and the Act and wildlife will benefit from state participation pursuant to the recognition of that prerogative.

The bottom line of all this is simple: the bull trout is a native Montana fish, and Montanans have not only a legal but a moral obligation to maintain viable populations of native species. We owe it to future generations of Montanans to be good stewards of resources that are as much theirs as ours.

This belief is not novel in Montana. A century ago, elk, bighorn sheep, mountain goats, grizzly bears, and other species were all but extinct in Montana. No longer. For the past 100 years, one of the most impressive wildlife conservation stories in America has transformed Montana prairies, mountains, and foothills into areas richly populated with wildlife. These past generations were good stewards, and now it is our turn to be good stewards for future generations.

Biologists like to talk about indicator species. The bull trout

collaborative process is an indicator process. The success of our efforts on bull trout will not only tell a great deal about us as a people, as a society, but will also determine whether future collaborative efforts are possible on other species, such as westslope cutthroat and Yellowstone cutthroat, and all natural resource management issues.

The bull trout is important for what it is—a native fish. And it is important for what it represents—a chance for Montanans to master our own future, to control our own economic opportunities, to determine how western Montana will look in the future and what the quality of life will be for those who live there.

It is as simple as this: when we retain the authority to manage our own native species, we retain the authority to manage our own destiny.

But no one should think this is an easy process with an easy solution. And it is much less difficult for states to "talk" native species management than to "walk" native species management. The challenges, from funding to legal authority, from economic impacts to public involvement, are immense. But the potential rewards to our people and our wildlife are also immense.

That's why the bull trout restoration efforts are so important, why we are so committed to it, and why a governor would fly across state lines to discuss it.

Thank you for your kind attention here today.

Chairman Cecil D. Andrus: Thank you very much, Governor, for a very enlightening and thought-provoking presentation and for your willingness to fly across those state lines to come here. In the way of full disclosure, I had nothing to do with the planning of the President's visit to your state when I called and asked you to come here and help us with this presentation. But Montana is a very important part of the Rocky Mountain West and Pacific Northwest, and we appreciate your willingness to do just what you have done today. Following the Andrus time, we try to run a little bit ahead of schedule, and so far so good. If you look at your program, you will find that we are scheduled to commence in the next room in 30 minutes. Dr. John Freemuth of Boise State University will start off the first panel with Mike Spear of the U.S. Fish and Wildlife Service making some comments that George Frampton was going to make. We will give you 15 minutes to stretch your legs, walk down the hall to find whatever room is appropriate, and then come back to the room next door. We will then start with the panel that talks about the legal and political landscape we face. Governor, thank you, sir.

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SEARCHING FOR SOLUTIONS: SOLVING THE BULL TROUT PUZZLE

PANEL ONE: "Survey of the Political/Legal Landscape"

Moderator, Dr. John Freemuth: For our bull trout conference, I'm John Freemuth. I'm your moderator for this and the next panel as well today. I am a professor here at BSU. The themes of our two panels today are the twin pillars of these issues these days: The political/legal landscape and the biological landscape. We are very privileged today to have a distinguished set of panelists representing both government and private interest perspectives on the bull trout issue. In your brochure, they are set up as Paul Brouha, Director of the American Fisheries Society; Rick Johnson from the Idaho Conservation League; Steve Mealey from the Columbia Basin E.I.S. project here in Boise; Bruce Smith, who is a lawyer with Rosholt, Robertson and Tucker; Michael Spear, the Regional Director of the U. S. Fish and Wildlife Service; and Dave Wright, the Supervisor of the Panhandle National Forest. They will speak in the order of, as you already know: Mike Spear, then Steve Mealey, Dave Wright, Paul Brouha, Bruce Smith, and Rick Johnson.

I have asked the panelists to speak for about 10 - 12 minutes because I can just guess that there will be a lot of questions from all of you, and we want to leave a lot of time for that. In the audience, I would urge you to do just one thing. Obviously, there are going to be some disagreements. That's why we are all here. Your questions can be pointed, but short. That would be greatly appreciated. Please do not stand up and give a speech. Other people are here to do that. If somebody takes the floor for too long, you will take time away from some other folks out there who probably have something they would like to ask or say.

I will forego long introductions because they are in your brochure, and you can see why these people are here. Otherwise, I would cut into their time, and I don't want to do that. With that, I will sit down and turn the panel over to our first speaker, Michael Spear, who is our Regional Director of the U. S. Fish and Wildlife Service.

Michael J. Spear: Good afternoon. I am pleased to be the first speaker, and as you were told by Governor Andrus, I am going to combine remarks that I would have given as Regional Director with those that were planned to be given by Assistant Secretary Frampton. A couple of introductory comments: The Pacific Region of the Fish and Wildlife Service covers six states—Hawaii, California, Nevada, Oregon, Idaho, and Washington. It is the center of endangered species controversies. We have the majority of the listings in the country, and we have a great number of the issues surrounding the Endangered Species Act. We have spotted owls, and we work with our colleagues at the National Marine Fisheries Service on Columbia River salmon. We have the California Gnat-Catcher, the Desert Tortoise, and the list goes on. I mention these because those are all indicative of ecosystem health, indicator-type species, and in that list I would very clearly put the bull trout as one of those. It is one of those top issues, concerns, and indicator species that we work with in this region.

For a little review of the background, I am going to try to make this as brief as possible. As you have already heard, the Fish and Wildlife Service was petitioned in October of 1992. The original petition to list the bull trout was added in January of 1993 with a specific petition on the Klamath population of the bull trout. In a 12-month finding, the way the Fish and Wildlife Service does 12-month findings, 20 months later, in June of 1994, we said that it was warranted but precluded; that the threats

were moderate but imminent; that the U. S. population was a distinct population segment; that the Klamath population would be considered with the bull trout as a whole; and that the priority was 9 on our priority list, with priority 1 being the most urgent. Priority 9, out of a possible 12 priorities, means that it had the characteristics of something that could be listed but that we had more important and more significant listings from the point of view of urgency to work on. That was in June of 1994, one month before I arrived in the region.

In late 1994 and early 1995, the bull trout was clearly coming to my attention from many, many different quarters—from legal quarters, the environmental community, from industry, etc. It became very clear to me that this was an issue that I wasn't going to be able to wish away as I would like to do with so many of them in the region. This one was going to be there and had to be dealt with. It bothered me at the time that there was so much uncertainty and that, although we had called it a priority 9, there seemed to be so much uncertainty and concern over the issue. The PACFISH standards had not been finalized. There was a great uproar about salvage logging on the Eastside and Upper Columbia areas. The EISs for the Upper Columbia and the Eastside were just getting started by the Forest Service, and there just seemed to be a great concern over the exact bull trout situation and over the need for a decision: Where does the Fish and Wildlife Service stand? At that time, particularly because of the salvage logging potential situation, we then judged that the threats were higher.

So, in January of this year, we moved it to a priority 3 and said, "We need to make a decision." Since January, the Fish and Wildlife Service has assembled a field team from the four states of Montana, Idaho, Oregon and Washington. We have engaged our federal colleagues in the four states in a very intensive way, gathering as much information as we can and collecting all the latest information to put together a status report. I am here to report today on what I have recommended on that. I will get to a little bit of the rationale in a second here. The bottom line that I am announcing today—and this would have been George's message—is that we haven't made a final decision but that because we are having this conference and felt it useful to have this information out at the beginning of the conference, we wanted to indicate what has been recommended.

I have recommended to the director of the Fish and Wildlife Service—and a final decision has not been made—that this species continue in the warranted but precluded category and that it be returned to a priority 9. The threats are moderate although, in many cases, imminent. This region has 102 species in Priorities 1 through 8, sixty-six (66) of which are in Priorities 1, 2, and 3. We are therefore indicating that, because we have moved the bull trout back into priority 9, it go back in a precluded status and that we re-judge the situation in one year.

Now, let me go into a little bit more background. One of the key things that has happened in the last few months is that, in December, the Forest Plan was decided upon by the judge and approved. That dealt in a satisfactory way with the bull trout in the range of the President's Forest Plan—largely, the Cascades and to the West. In February, the PACFISH—the interim standards called PACFISH—had been approved. Following shortly after that, the Forest Service proposed—and I am going to let them speak to the substance of these issues—their Inland Fisheries Strategy, which you have heard about. Meanwhile, it is very clear to us that all four states have very active programs to deal with bull trout, some of which were there in more nascent form but have been energized. Clearly, there is a great deal of interest and concern about bull trout. It is not being ignored. I think we couldn't have asked for a more direct statement to that effect than we heard from Governor Racicot at lunch.

In very simple terms, the Fish and Wildlife Service could not be more pleased with the work of our federal colleagues, especially the Fish and Wildlife Service, and the states. We say this is the way the Endangered Species Act is supposed to work. We in the Fish and Wildlife Service who have the responsibility for administering the law indicate that there is a concern. That's what our candidate list is supposed to do: talk about the concern, talk about the species' status as we see it, and then encourage our land management partners in the federal government as well as the states to develop programs to deal with those concerns.

We have been hearing from the states over the last year or so that they want a much bigger piece of the action of the Endangered Species Act. Again, we heard that from the Governor today at lunch. The Fish and Wildlife Service has been far too quick to list species and grab authority from the states for what is essentially a resident species as in the case of the bull trout. In my view, all four of the states have shown me in this instance that, if we give them some room, some encouragement, and some time, they will run with the ball. They are running with the ball. I will not say whether they are on the 30-yard line or the one-yard line about ready to score a touchdown. I think they are all in different positions. But there is no doubt in my mind that they are running with the ball. That is very clear with the Forest Service as well.

One of the concerns we had in January was that, because of NEPA problems and other things, the Forest Service was simply going to take too long through the Columbia River and Eastside EIS processes to engage in the bull trout issue. They very quickly grabbed on to the Inland Fish Strategy. They have clearly indicated to us that the bull trout is going to have a better day of it in the forest of the future.

The states and the feds have come together with bull trout conservation as the goal. I believe this conference needs to look at the quality of the programs the states and Forest Service have put together. Will these programs be implemented? How will they be implemented? What should the Fish and Wildlife Service course of action be over this next year? How do we collectively monitor the fish and the performance of both the states and agencies? In other words, as the Governor said, how do we hold them accountable? I think that should be the focus of this conference. I think it can begin to focus the discussion that needs to take place. What are the priorities? What are the key watersheds for the bull trout? And see if there is some common understanding across state lines.

There are those who have said that there is no bull trout problem. There are also those who have said that only the Fish and Wildlife Service can deal with it by listing the species. As we are indicating here today, at least I have recommended and I have every reason to believe the recommendation will be accepted, that we reject both of those ideas. We think that in cooperation with our partners—the states, the Forest Service, the BLM—we can look back on 1995, particularly the spring and summer of 1995, as perhaps the beginning of the recovery, the beginning of the better days ahead for the bull trout in the northwest. I want to thank Governor Andrus for pulling together this conference. I

think that it couldn't have been more timely. I think it is an excellent time now to forge the constructive alliances that are needed in the year ahead. I hope to be around for most of the conference and look forward to talking with many of you individually. If you have questions, we will answer them later on in this panel. Thank you.

Stephen P. Mealey: I am glad to be here and I want to second the compliments to Governor Andrus for providing this forum. I am Steve Mealey. I am the project manager for the Upper Columbia River Basin EIS project, and as you will hear many times today, the Inland Native Fish Strategy is an interim strategy which is to be refined if the Record of Decision is prepared, which is to be refined and finalized and implemented through the Upper Columbia River Basin EIS Record of Decision. So, that's a short-term strategy, and the EIS is the longer-term strategy to be completed about this time next year.

I really have three messages, but I won't sit down when I summarize them, which probably doesn't surprise some of you. I want to say, first of all, that we are in this long-term, broad-scale planning because of the political/legal landscape that's compelling us to effectively address and successfully litigate issues of broad scale. Our recent history hasn't been especially good in accomplishing those objectives as indicated by the history related to the spotted owls and anadromous fish, the possibilities of inland fish needs, the clean water, etc. That's message one.

The second message has to do with what happened on the second Tuesday in November. I think the President is probably responding to that today in Montana where he said, "I'm not declaring war on the West." That's a hard sell out here where a lot of folks have lost patience with the perceived loss of local control and over-regulation by federal agencies. That's the second message.

And the third message is that we are proceeding in a very tough and contentious political/legal landscape with mixed messages. Now those are the three message, and I want to elaborate on them.

You might recall that on the 28th of January, we rolled out the Purpose and Needs Statement through the electronic media and downlinked into 30 towns, and that was very proximal to the injunction over the Pacific Rivers Council litigation, which would have foreclosed management on eight national forests. That would have affected people in Challis and Salmon disproportionately, and they weren't in any mood to hear some jerk from Boise talk about ecosystem management. So, we canceled the January 28th meeting, and I went back three weeks later. I can't say that in Challis the mood was much better. It was a tough meeting, and after about three hours of very agonizing discussions, the meeting ended. A gentleman came up to me at the end and said, "If my grandchildren miss a meal because of your ecosystem management project, I'll come looking for you." And I want to tell you, he wasn't smiling and I wasn't either. And I want to tell you that I didn't take that as a threat, but as an expression of frustration, fear, and lack of control over external forces and events capable of causing serious local adverse effects.

There is good reason for that gentleman's fears. The Pacific Rivers Council injunction would have ended, at least temporarily, seven hundred projects over eight national forests. It's a good thing we have PACFISH, because if we didn't, that injunction would have been in place and 800 people in the mines would have been out of work. Frankly, because of PACFISH, we were able to stipulate out of that. That is, the plaintiff stipulated a solution that avoided injunction. Of course, that logic was the underpinning for Dave's project. People were not pleased with wolf reintroduction—not so much about wolf reintroduction, but they asked, "What good did our input do? You say you're here to listen to us, but what do you do with the information?"

About this Interior Columbia Basin project, who cares about a few people in a small town? I heard that two days ago in Philipsburg, Montana. Twenty-five hundred people live in all of Granite County with those two large metropolises of Philipsburg and Drummond with Hall in between, which has about 50 people. "Who cares about us?" What I want to say is that these three events are playing out an understandably threatening, broader situation for natural resource-based communities. One recent observer of natural resources politics referred to the current situation as "government by lawsuit." And that is, if you can't get what you want administratively, then get it by litigation.

One indication is that there is a nearly ten-fold increase in administrative appeals of Forest Service decisions since 1985, from about 200 to about 2,000 at any point. The numbers of lawsuits have increased significantly, from about 4.5 per year for the period 1970 to 1995 to about 11 per year from 1989 to 1995. What's more important is not the volume of litigation but the type of litigation. Significantly, now plaintiffs seem to be controlling or seeking control of land use over the largest possible geographic areas, and it is an issue of control. So, if you are going to do that, what do you litigate? You litigate on the needs of northern spotted owls, of California owls, of goshawks, of red-cockaded woodpeckers, of marbled murrelets, of grizzly bears, of salmon, of bull trout, of other inland fish, and clean water.

Plaintiffs have sought changed management over large tracts as both temporary or injunctive permanent relief. And I won't repeat the case law. But if large-area control is the objective, then this approach is much more efficient than challenging individual projects, which has been the strategy in the past and was the traditional approach. These issues of broad or large scale, such as viability and biodiversity, have been difficult to defend, as owl and salmon litigation indicates. When I talk about issues of scale—and that is the point here—we are talking about scale in time that is a broad scale—the effects of actions in terms of long periods. Viability is considered generally as some probability of persistence over a century. Space means not just a project but a landscape of tens of thousands and hundreds of thousands of acres.

Traditionally, of course, planning typically ends at the boundaries of the jurisdiction in question, whether it's a national forest or a BLM district. These issues of scale have been difficult to defend simply because there was no clear broad-scale dimension to the way the agencies—the Forest Service and the BLM—have done planning in the past. In the Boise National Forest, the precious place I just left, a large area of two and a half million acres, the Forest Plan was limited by the boundaries essentially of that forest, although there were some off-site considerations. Principally, the effects of actions terminated in its assessment of the boundaries of that jurisdiction.

Nationally and regionally, the consequences of our inability to defend and address these issues have been significant. Nationally, the timber sold from the national forests has declined more

than 70% since 1985. The numbers have gone from about 11 billion board feet to about 3 billion board feet last year. Mostly due to spotted owl litigation, in Idaho timber sold from national forests has declined in half, from about 700 million to about 350 million last year because of grizzly bear standards, PACFISH implementation, water quality requirements, and roadless area issues. I am not saying these things are good or bad. I am simply saying there have been changes because of our inability to provide resources.

These are all issues of scale. Idaho has lost 30 mills and 1,850 jobs while Oregon and Washington have lost more than 360 mills and 33,000 jobs since 1980, much of it due to our inability to defend and plan for issues of scale, not withstanding technological changes. This has had a huge effect on people. In Idaho in particular, 90% of the state is rural. More than 40 percent of the population is rural. All communities, urban and rural, are poised differently to react to these kinds of changes. Maintenance of infrastructure in small communities like Horseshoe Bend and Phillipsburg, Montana is tough. Two-thirds of rural Idaho is federally-owned and this has provided residents with access to amenities. It also makes them vulnerable to significant changes when they are dependent on natural resources. Fourteen counties in Idaho lost employment in the last decade. Idaho's gross state product is more dependent on national forest-based industry than any other state in America.

So what does all this say about that gentleman in Challis, who is concerned about his grandchildren? Clearly, our inability to plan successfully and to defend and litigate issues of scale places them at risk. The current situation, as it relates to scale, says that we have to do things differently. I want to say that Chief Thomas and Director Dombeck addressed this issue recently. The Chief, in particular, in a statement on forest health, said, "As chief of the Forest Service, I can no longer abide an agency being mired in a quagmire of controversy, suffering in paralysis born out of fear of the controversy and the threat of challenge to every action. I was taught long ago and far away that conservation was wise use and conservationists were leaders. We intend to be conservation leaders." Together, then, they announced the Upper Columbia River Basin project and the Eastside project and the accompanying scientific assessment over a huge area—Oregon, Washington, Idaho, and Montana—to address issues of scale. The Chief told me personally, "I cannot stand to see areas in this huge area go through the same agony that rural communities did on the west side of the Cascades. We don't need to relive that."

So, accordingly, we undertook the interior Columbia Basin project to issues of scale. There are probably two major motivations for this one project that has three pieces. One project with three pieces—a science piece and two EIS pieces. These two EIS teams function essentially as one in important shared tasks. There are two critical motivations then, as I sum up. One is defensive, and that is simply to increase the probabilities in prevailing in litigation over issues of scale. Perhaps the other side of that, the affirmative reason, is to provide and improve options for resolving compelling broad-scale ecosystem problems; to provide for significant solutions to forest ecosystem health and shrub and grassland ecosystem health; and to provide for better riparian and aquatic ecosystem health, including the conditions of inland native fish and bull trout as well as salmon. Finally, and most importantly, to provide for predictable and sustainable supplies of things for people, not just things they sell but things they love and enjoy spiritually and in a recreational context.

Let me then end with my expectations of the outcome of this long-term strategy that will refine the species-by-species planning associated with bull trout, for example. I believe that the Records of Decision for both the Upper Columbia River Basin EIS project and for the Eastside EIS will develop a big-picture ecosystem management strategy that will strengthen multiple use:

—by providing sustainable resources for people;

—by taking definitive action in response to many critical issues of scale, such as endangered species, species population viability, including bull trout and inland fish and forest health, in one effort, saving time and money;

—by offering solutions to forest and rangeland health problems that will result in sustainable resources and jobs following the first rule of medicine and Hippocrates: "Do no harm;"

—by refining PACFISH and, if we go to a Record of Decision with the Inland Native Fish Strategy, the concepts embodied in those species-specific plans with flexible approaches that will protect fish and other species and also provide for needed management of both riparian and upland areas to reduce ecological risks, whatever they may represent;

—by resolving broad big-picture problems that cross jurisdictional lines to replace bandaid solutions—and I hope that is not an inappropriate reference to PACFISH and Inland Native Fish Strategy—but if they are short-term, they are a bandaid;

—by providing for species viability on an ecosystem basis rather than with a species-by-species approach, which means we move away from individual strategies for individual species toward strategies for ecosystems;

—and, finally, by providing a much greater opportunity for inter-agency cooperation, where we come together as we did today with full partnerships with state and local and county and tribal governments. Such cooperation is now more feasible as a result of Senator Kempthorne's un-funded mandates legislation which suspends FACA (Federal Advisory Committee Act) requirements and allows us to deal directly with the local elected officials.

Finally, then let me say that I understand the project is not without risk and that, in the end, some decisions may seem foreign to local people; that large scale injunctions from litigation may still occur; and that all issues of scale will not be perfectly resolved. I also believe that without the assessment and these strategies and without long-term strategies to replace the shorter ones, all these risks will be much greater and that the critical and urgent issues, such as forest ecosystem health, will receive less quality attention.

Finally, that gentleman from Challis is my conscience. I tell myself each day that if I stop believing this, I will go to Challis and tell him that. Thank you.

Dave Wright: Good afternoon. Once again, my name is Dave Wright. I am the Forest Supervisor on the Coeur d'Alene and

Idaho Panhandle National Forests, and I am the team leader for the Inland Native Fish Strategy. I, too, would like to thank Governor Andrus for the opportunity to bring you all up to date on where we are with that project. I also might add that if Cecil would hang his fly line up in the trees more often, like you did a couple years ago, we would have a lot more of these fish around. Right? Catch and release. That's right.

My speech today really focuses today on where our strategy is and to share some current information with you that we have garnered to date. If I had to title this, I would title it Choices because it is choices that stand before the three regional foresters and Mike Spear, choices on how to proceed with the issues that are before them now. To me, successful stewardship of our national forests is dependent upon a continuous recycling of the social, political, and scientific choices that we all have to make. Changes to land stewardship occur whenever there is a significant physical change to the ecosystem or whenever there are social or political shifts in the national direction that necessitate changes in our land management strategies.

The foundation of national forest stewardship was itself a choice by the people of America many years ago to establish a federal forest reserve system rather than to allow these national forests to be ravaged indiscriminately as they were at one point. Since that time, there have been many more choices made by the American public through their Congress—such as the Multiple Use Sustained Yield Act, the Wilderness Act, the National Forest Management Act, the National Environmental Protection Act, and the Endangered Species Act—to name a few that have set the course of direction to be followed in the stewardship of the national forest resource.

As time has progressed, the window of management flexibility continues to get smaller and continues to close in on us. As the increasingly complex desires of our nation are captured in new legislation or judicial interpretation of existing legislation, the beauty of our American system is that if something is not working as the public would like it to, they do have the opportunity to explore change and offer up new choices. The agony of this system is that effecting a new choice is sometimes very difficult, very painful, obviously very time consuming, and not very pretty. One fact remains very clear, though, that once the choice has been made and made into law, a land steward's only rational choice is to obey the law.

With that preference, our Inland Native Fish Team, our executive steering group, stepped forward with the opportunity for a new choice, a choice of action designed to meet the intent of the Endangered Species Act, the National Forest Management Act, and the common-sense principles of good land stewardship. On behalf of Regional Foresters John Lowe of Region 6; Dale Bosworth of Region 4; John Hughes of Region 1; Mike Spears, the Regional Director of the Fish and Wildlife Service in Portland; and an awfully hard-working team of folks from both Fish and Wildlife Service, the BLM, and the Forest Service who helped put this together, it is my pleasure today to present to you an overview of what that Inland Native Fish Strategy is.

I would like to begin very quickly with a summary, and I will skip over some of the points that Mike had already covered adequately here. There are three things that are driving this strategy at this point at time. The first one, as Mike has explained and Governor Racicot mentioned in his speech this afternoon, we are seeing from the information that we are gathering at this broader scale that Steve is talking about, definite declines in the population of sensitive native fish species. Those are due primarily to various factors, and I am sure we don't have all of them captured here. Climatic warming is part of the cause; loss of cold water habitat through the activities of man or through natural occurrences of natural events; fishing pressure; and the introduction of exotic species is a big one that is causing us some problems in this area.

Mike talked about the Endangered Species Act and the decisions the Fish and Wildlife Service needed to make earlier this year and that he announced to you this morning. That was something that was very important to the steering group that we needed to act on. One item that people keep glossing over because there is a lot of focus on the ESA is that we also have to respond to legal challenges against us in terms of the National Forest Management Act. There is litigation, filed by environmental groups from Montana in December of 1994, against the three regions for failure to protect viable populations of bull trout. As of last night, we petitioned the federal court to dismiss that suit, based upon the fact that we are working on this strategy and that there are a lot of good things going on, and the judge decided to postpone his decision. He would not dismiss it, but wanted to wait an additional 60 days and see what surfaces out of here in terms of an Inland Native Fish Strategy on national forest lands. So that is a driver for us that we need to resolve and get on with and deal with that existing litigation.

I would also add that the regional foresters have received some information that people intend to file for injunctive relief if some strategy does not come forward. It would be very similar to the PRC situation we all dealt with earlier this year, so we are trying to avoid that. But our primary reason for doing all this is that we don't want a shut-down of the activities that we provide to the people that we serve in terms of the goods and services that are produced off of national forest lands. The only way we think we can do that in a logical fashion is to proceed with an interim strategy, which is the goal that will be replaced, as Steve said, by the final strategy developed in the two EISs for the Eastside—Oregon and Washington—and the Upper Columbia River Basin EIS efforts.

Very briefly, the area that we are working on is about 25 million acres. It is the area in orange. We are not working in the area in white, which is west of the Cascades. That is primarily the President's Forest Plan, and adequate direction exists there, as Mike has explained earlier. The area in green is PACFISH. We are not dealing with that area. That area also was adequately covered with existing direction. So the area that our team is focused on was the Inland Native Fish Strategy, which is the area in orange.

Governor Racicot spoke to this today in terms of what they are seeing in fall-down from historic populations of bull trout in Montana. We have a similar graphic, thanks to the work at Walla Walla. This information is now available at the broad scale we have never had before, and we are able to do some analysis that we have never been able to do before on such a large scale. Basically, I think you can see very roughly, I've got the data if you want it. Just pictorially, there has been a significant reduction in bull trout habitat from what it was historically to what it is today. This gives you an idea in relationship to the national forests where the occupied habitat that we know of today is within the Columbia River Basin. As I will talk about here in a little bit,

these are the areas that we focused on in our analysis and our applications of streams that were priority watersheds of the bull trout, which we did in the environmental assessment.

Very briefly, we considered this range of alternatives in our environmental assessment. "A", a no-action alternative, which basically maintains the status quo that we have in our forest plans; and "B", a focus on priority water sheds, which was primarily a focus only on the bull trout. I will interject at this point that it is the recommendation of our team's executive group that this strategy be expanded from bull trout to inland native fish species. There is a lot of interest out there about also filing litigation against the national forest system for cutthroat trout, redband trout, and those kinds of things. So we decided to recommend that it be treated holistically, and they agreed. Several of the alternatives were holistic, but this one focuses just on bull trout.

Alternative "C" was an option that was offered up by some of the industry groups in terms of Ida-Fish 2000, and I am sure we will hear more about that one later on in the conference. Alternative "D" consists of direction within the resource habitat conservation areas and basically provides similar direction across the board from the President's Forest Plan area through the PACFISH area to the Inland Native Fish area. Alternative "E" is basically, for lack of better words, PACFISH-plus with even more stringent standards and guidelines in water shed analysis, applying what we have done in option "D", for example.

As Mike has announced to you today, I announce to you, on behalf of the executive steering group, that they have come down on a preferred alternative, which will be assessed during this next public comment period, of option "D." That's the one we intend to proceed with right now as a preferred alternative.

What are the consequences of applying alternative "D"? That has been a question that has been asked, and we've asked each region and each forest within the Columbia River Basin to make an assessment, based upon the screens of criteria we provided to them, of the potential impact of the application of this strategy in the next 18 months. As you can see from a timber perspective, there are about 2.1 billion board feet of timber under contract or soon under contract within the Columbia River Basin in the next 18 months. Of that 2.1 billion, only 38 million board feet fell out as being in the high-to-moderate risk category. Don't even take the 38 million at face value because it might only be a single unit, a road, or something that can be easily modified. So this is not necessarily volume lost. This is volume that may need to be modified in some fashion to meet the intent of the strategy.

Very quickly, 30 million of that is volume that is presently under contract. The total stumpage value of that 38 million is about $9.3 million. If you look at it in terms of payment to counties, it is $2.8 million. From a grazing perspective, in terms of allotments within the priority watersheds themselves, there are 288 of those. Of the 288, 31 allotments or about 46,000 AUMs, which represents about three percent of the total AUMs, would fall into the category of heightened water risk and would need some immediate modification or mitigation if implemented.

Mining. Also within the priority watersheds, we have 40 projects identified, and they range anywhere from a placer mining operation to a reclamation project. Those would have to be looked at to make sure that they adhere to the standards and guidelines.

Recreation. We have 12 projects within those priority watersheds that would have to be looked at. They range from campgrounds to trail construction. Those two would have to be looked at for some form of modification.

In a general sense, on that particular slide, the implementation of this strategy in the next 18 months appears to us to have very minor impact on the activities that may be out there on the ground.

It has been to my benefit to have the opportunity to go around and meet with all the governors' staffs in Idaho, Montana, Oregon and Washington. I learned a great deal from these folks, and I learned that there are some definite solutions out there, in my opinion, for combining state strategies with federal strategies and approaching this in a holistic, procedural manner. I think that can very well be woven into the final product that we do with the EISs. In terms of the interim strategy and the timing of it, it is difficult now because Idaho anticipates maybe having its strategy in place around December. Montana, sometime this fall. Oregon and Washington are not real sure yet. So, we've got to work on that. We need to take a look at incorporating that.

Very quickly, our time line. Everything in black, we've already done. Actually, May 24th should be a later date—should be sometime in June. As we speak, the environmental assessment is to the printer today. It will be available for public review, we hope by the end of next or at least the Monday after that. There will be 30-day comment period that we have agreed to do as a result of public input and on or about July 17th, the steering group, Mike Spears and the three regional foresters, based upon the public comment we receive on this range of alternatives, will make the final decision or Record of Decision on which choice we need to make for an interim strategy.

In very brief summary, we feel there is an urgency to have an interim strategy in place in order to make sure that the operation of the national forest system is there to provide a continuing flow of goods and services to the folks that we serve out there. That's why we need to do it and that's where we are right now. So, thank you.

Paul Brouha: Governor, the title of this, solutions for the bull trout puzzle, is particularly appropriate. I love your visual aid. I couldn't have made a better one myself. The title that I would propose for this brief set of remarks I am about to make is, "The Scientists Piecemaking for the Bull Trout Puzzle," and it's p-i-e-c-e-making. We intend to provide some strategies to fill in those blanks. Many of you are American Fisheries Society members, and I am delighted to see you in the audience.

You all know that AFS is about a 9,000-member professional organization and scientific society that promotes the advancement of the science and the advancement of the profession, but also has conservation, development, and wise-use in its best sense as its constitutional, multi-purpose mission. Nobody used to care about, much less take action, over fish. They reserve such emotional intensity and activities for bald eagles and other mega fauna that we are all quite familiar with. But to illustrate the point, when the Pauite trout was federally listed as threatened, the grazing of livestock along the stream banks wasn't even altered on Toiyabe National Forest.

When I left this region in 1984 from the regional fisheries program position and went to Washington, I tried to advocate the idea of an adfluvial fish initiative, and everybody I talked to about it said, "We understand anadromous, but adfluvial?" I would then tell them about bull trout, and they would just sort of smile

and kind of pat me on the head. Well, it wasn't until the public was brought face to face with the reality that hundreds of salmon stocks in Washington, Oregon, and Idaho were extinct or at real risk of extinction that we began to realize that we had a national crisis on our hands and that we'd better do something about it. Lawsuits have followed.

Why care about fish? I think Governor Racicot said it better than I could. Specifically, why care about native fish, and why should a policy center like this one choose to discuss bull trout management or any native fish management? I suggest it's because we finally realize that these fish are indicators of the health, diversity, and productivity of our watersheds in the western United States. We realize the declines and the accelerated extinction of native populations are warning bells for the appropriate limits to what I would call balanced multiple-use management that we have seen in my entire career working in these watersheds.

In the final analysis, this discussion is not simply about a solution to the bull trout puzzle. Certainly it is that. But it is also about ensuring that we keep the watersheds in some of the last, best places on earth as productive and as nearly natural as possible for present and future generations.

The habitat of bull trout has been altered. You all know how. It has been explained in quite a lot of detail. But in each case, the fish has been faced with accommodating each new use, and as a result, the bull trout that was once a very widely distributed species and considered common in the 1800's has declined drastically. They now tend to be small populations confined to isolated watersheds. This type of population is at higher risk of extinction than larger populations, obviously.

Most would agree that the objective of present-day natural resource management is to allocate for future generations while preserving the potential of our natural resource wealth and diversity for future generations. Scientists have worked with policymakers to allocate resources at the long-standing request of their public employers. Sustaining harvestable fish populations in the face of potential short-term economic gains derived from mining, logging, irrigation, and hydropower operation, however, has been a very tough proposition. Against competing users in the current generation, fish interests have lost every contest. The fish have been just about multiple-used out of the picture. The allocation of fish for future generations may not be much of an issue unless we can address the current threats of increasing human population and the attendant competition for natural resource commodities that we have here in the western United States.

We live in a flawed world. Each of us—miners, loggers, ranchers, and scientists—approaches the route to the desired future from a mix of scientific, perhaps social, and also political perspectives. Individually, based on our values, each of us has a way to attain our vision. Interestingly, our laws, procedures attendant to them, our flawed institutions, their attending social models and communication barriers have prevented us from ever achieving those desired futures. I would suggest that the experiment that the Governor of Montana has explained to us is a first. He knows it, and I think there's a good chance that it will succeed.

How does such a philosophical statement relate to management of western watersheds to sustain native fish species like the bull trout? How does it relate to allocating against very desired uses, and specifically against commodity production. Steve Mealey went into a great deal of detail about all the industry jobs that are at risk. We also have potential, I think, for a lot of recreation-based jobs in Idaho. I don't have the statistics. I am sure you have those on the tip of your tongue. We can bring them up during the discussion. I contend that the scientists' perspective in searching for solutions to this puzzle is perhaps the most altruistic or at least less rooted in vested interest or perhaps in the desire for short-term gain than most others.

The scientific vision of the desired future is just as unattainable as the social idealogues' or perhaps the politicians' vision. When asked to achieve the magic, for it is magic, of a perfect solution to the bull trout puzzle, none of these perspectives reflects the reality of decision-making in our flawed world, and all reflect a suspension of consciousness of others' needs. All are unrealistic dreams, perhaps achieved in ignorance, blissful perhaps, blind in others—an ignorance of reality. Perhaps it may be a means to an end. The crucial point is, no matter what our perspective, we must address the reality of the present puzzle by communicating among all users with as much pertinent, objective information as we can marshal. Here, scientists applying the scientific method, can contribute pieces to solve this puzzle in perhaps some of the following ways.

Scientists can, on the basis of their special training and disciplined observation over time, provide and facilitate the use of objective information by decision makers. I think we are already doing that. The data will not by any means be perfect, but we can ensure that all the pertinent data that is available have been examined and appropriately analyzed and that, as a result, the best scientific information is made available, certainly as required by the Endangered Species Act but as required by any responsible resource allocation and decision-making process. Scientists can define where gaps in knowledge or resource information exist, and they can develop research agendas to produce over time the needed information.

Scientists can, on the basis of special training and their knowledge about species, define the biological limits beyond which sustainable production is put at risk. Because of such knowledge, they can help design and can provide valuable counsel on the consequences of proposed alternative solutions. I think what Dave Wright described is largely what scientists are helping to try and condition.

In the case of the bull trout, fishery scientists are working with policymakers to develop these conservation strategies in virtually every jurisdiction across the bull trout's range to ensure its production and undisturbed watersheds. They are also working to restore populations where land management activities have degraded or reduced habitat availability or have resulted in critically isolated or fragmented populations, where there has been an increased vulnerability because of human or other predation through improved access, or perhaps where it has resulted in hybridization from the introduction of or competition from other exotic species.

As scientists provide these services, they test their individual conclusions through peer review and through scholarly debate to ensure that the best collective judgment is applied on the basis of current knowledge. We establish and work from that basis until more knowledge shows that a new benchmark is appropriate. Our perennial challenge is to establish each benchmark with a synthesis of as much valid and objective information as is cur-

rently available. We must also be willing to update that benchmark when significant, new information becomes available.

The final piece to the puzzle that we can contribute beyond getting information out is to convey to the public the significance of the bull trout. Scientists are concerned that bull trout populations not be wiped out because when the indicator goes, the environment on which humans depend may ultimately also go. The public has assigned us stewards, paid primarily with public dollars, the job of keeping resources healthy for posterity. We are collaborating with policymakers to do that. We can't restore bull trout to their prior abundance or distribution throughout their historic range, but there is still time to conserve some of the stronger populations. We have the knowledge of how to begin. Let's also have the will because our environmental debt is rising just like our national debt. Both have the potential to cripple future generations of Americans. Thank you.

Bruce M. Smith, Esq.: Good afternoon. I am the lawyer on the panel. We are here on this panel to talk about the political and legal landscape affecting the bull trout. I work a lot, probably 95% of my time, in natural resource and environmental areas. A great deal of my time is spent being involved in matters related to the Endangered Species Act.

As I was listening to the other speakers talk, particularly Steve's comments regarding the present status of litigation, I want to re-emphasize one point that he made. Not only are we seeing increases generally in the levels of litigation as the various interest groups seek to pursue their own interests—and I will tell you I think the courts are an appropriate place if you have interests you want to protect—it is increasing also in intensity. Particularly what we are seeing is litigation that involves primarily claims that result in injunctive relief. The scope of the injunctions that we presently see either being asked for or being granted is quite alarming, even to me as a lawyer who deals with that on a day-to-day basis. I want to re-emphasize that and bring it to everybody's attention.

As I was trying to think of the major points that I wanted to make to you regarding this political/legal landscape, I narrowed it down to three things. One is the present bull trout litigation. The second one is the ESA re-authorization, and third one is the Pacific Rivers Council case, which Steve and another speaker mentioned. I want to explain a little bit more about that one and why it is particularly important.

With the bull trout litigation, we have two lawsuits pending over in Portland in Federal District Court. One is against the Forest Service for failing to maintain viable populations of bull trout. As Dave mentioned, we had a hearing on that case a couple of days ago, and the judge stayed any further proceedings in that for sixty days. In large part, he did so because the government lawyers indicated that the Inland Native Fish Strategy decision would be coming out I think on July 17th. That litigation is stayed for right now for the next couple months, and I don't think we will see anything happening on that as these decisions are being made by the Forest Service.

The other lawsuit is against the U. S. Fish and Wildlife Service and is a challenge to their decision, the warranted-but-precluded decision, with a priority rating of 9, as well as its failure to emergency-list certain populations of bull trout. Again, as I start off on this panel, we were anticipating a decision next Tuesday from the Fish and Wildlife Service about what they were going to do with the status of the bull trout. Because that was the situation, the judge has put off the hearings on that particular lawsuit until June 15th. Now that the decision, or at least the recommendation has been made (I guess we will still see a decision Tuesday), we have to wait and see what happens on this particular case. I will tell you that some government lawyers are going to be scrambling right now, based on this recommendation, because part of their presentation to the court was that the status of the bull trout, the priority rating, had gone from 9 from 3. Now that it is going back to 9, if that is the final conclusion, they are going to be rewriting some things.

Quite frankly, I don't know what's going to happen in either one of those cases. I think, given the comments by Mike and Steve, we are faced now with an opportunity to get rid of the litigation and get on with some more effective bull trout management to try to improve the bull trout situation. As I said, those cases are in fairly early stages of litigation, and I think it remains to be seen what the plaintiff's response to these decisions is going to be. Given the fact that the litigation is not resolved, I think re-authorization plays an important role here.

Senator Gorton has introduced a bill for re-authorization. There is presently pending in the House a committee that is working on its own version of a re-authorization bill. Senator Kempthorne, who is chairman of the Drinking Water, Fisheries and Wildlife Subcommittee, and who is out in the west conducting hearings right now and will be up in Lewiston tomorrow for some hearings, may fashion his own version of an ESA re-authorization bill. We know it's coming; we know the issues are there. I think if you look at re-authorization bills, almost every major issue or every major component of the ESA is up for debate. This brings up questions of listing criteria, the consultation process, the section 6 process which deals with the federal-state cooperative agreement issues, and section 10, permitting and habitat conservation planning. I think section 6 is going to be something to pay particular attention to, maybe in bull trout, maybe in another species, because you are seeing states take a much more active role or at least assert a much stronger interest in dealing with endangered species issues.

Two years ago, the state of California was way out in front of most states in terms of pursuing the state's involvement in ESA regulations and management issues. As you heard Governor Racicot from Montana speak at lunch, Montana is taking an active role, and I think most of you, at least from the state of Idaho, know that the state of Idaho is taking a very active role in these issues. Section 10, permitting and habitat conservation planning, is also going to be important in re-authorization. For bull trout, it is important because, quite frankly, a lot of bull trout habitat is on private lands. While we deal with, for instance the federal section 7 consultation process on federal lands, the private lands are another matter, and I know that there is some concern out there among private entities, that the habitat conservation process and section 10 permitting are not as efficient as they would like to see. Quite frankly, there are some efforts underway to see if the section 10 process couldn't look more like the section 7.

The third point is the Pacific Rivers Council case. I particularly want to mention it because of the significance of that particular ruling and also to re-emphasize that one of things that you see now is federal courts and district judges becoming more and more involved in land management issues. In the Pacific Rivers Council case, there were actually two lawsuits there. One started

over in Oregon, and then there was a subsequent suit here in Idaho. They dealt with the issue of whether the Forest Service was obligated to consult with the National Marine Fisheries Service on its land management plans, even though those plans were in existence, when there was a subsequent listing, e.g. salmon. The Oregon case went up to Ninth Circuit, and that's the ruling that came out that everybody is generally aware of. The court said, "Yes, Forest Service, you will consult on your land management plans on subsequently-listed species." That's the status of the law in the Ninth Circuit now.

The Oregon case dealt with two national forests and the Idaho case dealt with six, and both are back up on appeal to the Ninth Circuit. Probably the major factor in that litigation, other than the pure legal question about consultation, was that the district courts issued injunctions, pending completion of the consultation process. As you heard Steve talking about the impacts and ramifications of those injunctions on the Forest Service, let me tell you, my phone did not stop ringing from the Lemhi-Custer County area when the judge announced those injunctions. A high level of anxiety and concern was expressed by those people, and they didn't know exactly what was taking place. All they knew was that things were being shut down.

It poses a very significant problem and it raises some significant issues. When emotions run that high, people do things that they wouldn't normally do. If we get, for instance, a bull trout listing as a result of the litigation, or if we deal with other listed species, how the Forest Service and/or BLM would respond to those situations is going to be significant, and it will be closely watched, I can guarantee you that.

When the salmon were listed, I was involved in that process early on. I was part of the Salmon Summit process, and I have followed the salmon listing through most of the subsequent litigation. One thing I see here that is different from the salmon situation is that, with salmon, we had broad-ranging anadromous species that posed a very, very complex situation. As good an effort as everyone made through the Salmon Summit process to come together and fashion some remedy, the complexity of that situation almost precluded everyone coming to agreement. I think, sitting here looking at the bull trout situation, we are offered a much greater opportunity to sit down together to avoid the litigation and to work out some kind of reasonable solution on how we are going to deal with these issues. So, given my perspective and my history of looking at the salmon situation in the context of the bull trout, I just want to offer some encouragement there to all of you who will be involved in that process. You will be involved in it and probably come to some agreement, and I won't have a job. So we'll see how it works out. Thank you very much.

Rick Johnson: Well, I am one of litigants. If everybody, for just a quick second, could just stand up real briefly. Don't anybody leave the room or anything, just stand up. Everybody needs a little blood to circulate. I'm also going to have to ask you to use your head for a second. As you sit down, which you can all start to do, think of your favorite place. It could be from your childhood, it could be from someplace you were, a place you were last weekend. Would that place still be there if the environmental laws that we have today were not in place? Will that place be there tomorrow if the environmental laws are not in place. That's what today's political landscape is about.

Providing a survey of the political landscape from my position requires a pretty stiff upper lip. I was probably picked for this so you could all watch a grown conservationist weeping on stage or at least squirming a little bit. Let's just say that the politics of protecting bull trout or the politics of protecting anything are what I might call a bit challenging right now. But I am an optimist. I wake up every day as an optimist, believing that I am going to make this place better. Because of that, I am upbeat.

In this very brief tangent, related to my first example of the landscape, I would like to offer Governor Andrus a word of thanks for bringing this process together. He had to do a lot of scrambling and got some heat about the fairness and balance of this event from all sides. I am testifying this Saturday at the U. S. Senate Endangered Species Act in Lewiston, and I have never seen a witness list that is alleged to be fair be so one-sided and stacked against useful discourse of public policy. Although I have disagreed with Governor Andrus on some policy issues in the past, I surely wish the Andrus Center for Public Policy had some control over the turkey shoot we are going to be seeing in Lewiston this weekend. I expect and hope for a much more useful product from this event to save bull trout in the Northern Rockies.

This is a tough time to be talking about protecting a species that occupies a large habitat area, particularly a habitat area where federal officials are threatened with their lives, where irrational backlash against environmental laws from a minority of the public helps foster a militia, a hate-the-government mentality, where the Endangered Species Act has now become the poster child of everything everyone hates about protecting the environment. The ESA is not perfect, but it sure isn't as bad as the rhetoric of people who really ought to know a whole lot better.

We are not here today because the bull trout are in trouble. If that were the case, I would hope that we would have been here a long time ago. We are here today because people tried to use the ESA to save bull trout and that has created some interesting politics. Fish in crisis is boring. Politics, particularly environmental politics, are anything but boring. In talking about the political landscape, I don't have to tell you what happened last November. You know; it's obvious. The results are the single greatest attack on environmental laws that we have ever seen in our lifetime. Think about that for a second. We are talking about oil drilling in national wildlife refuges. We are talking about saving salmon. We are talking about bull trout. We are talking about the Clean Water Act. We are talking about everything that many of you, whether you agree with me or not, care about. I urge you strongly to start paying attention to what is going on beyond what your particular issue is.

So, the process that made November happen (I think there are many different things that happened there) stemmed first and foremost from frustration. A couple different people have mentioned that. It is legit. Last November was democracy's equivalent to TV channel surfing. The public didn't like what was on the tube, so they went into the ballot box, and they changed the channel. I've worked hundreds of days in Washington, D. C., walking up and down the halls of the House and Senate office buildings, and from what I have seen there, I can't blame the public at all. But I think what's more important than what happened in November and what the process was, is what the people are thinking right now—the public. That's the base of politics

and that's what matters most to Idaho.

What matters most in the long run is the bull trout. I have just returned to Idaho from a little stint outside the state. I am most pleased to be back. Last time I lived here, I owned a construction company, and I was a reporter. I also worked for the Idaho Conservation League. In the last few months, I have been reacquainting myself, traveling throughout Idaho, and I have been talking to people. I have also been doing a whole lot of research. I have paid for my own focus groups, I have done a lot of polling, and all of this is doing basic research to make sure that I am not crazy and to make sure that Albertson's really isn't where Idaho wants to get its fish.

I have learned a few other things in the research, some of which I think is relevant today. Ninety-three percent of Idahoans think this is a great place to raise a family. Ninety-four percent of Idahoans think this is a great place for recreation and leisure. These are based on things we all care about. If not the highest, Idaho has one of the nation's highest percentages of the public owning a fishing license. What Congress is doing or trying to do to Idaho's forests and waters is not what Idahoans want. It is definitely what industry wants, but it is not what Idaho wants. We are all getting older, even me, but of our youngest adults, the Idahoans between 18 and 29 (a working generation that doesn't happen to be well represented around here), sixty-five percent of them in Idaho don't believe we are doing enough to protect endangered species.

In a series of focus groups I did, I re-learned something that most conservationists long ago forgot. Idaho is a hugely value-driven culture. More than most any other state, those values create a conservative public, distrustful of change and very distrustful of government. This conservative public, which Idaho always has had and probably always will have, can still be good conservationists if the issues are presented in ways that complement those deeply held values instead of conflicting with them. Look at what Frank Church did. It is not an accident that the state of Idaho has the largest wilderness area in the lower 48 states. Ask Cecil Andrus. Conservative and conservation have the same root word. It's time for us as a community, collectively, to remind the public of that.

So what does this all have to do with bull trout? I would say a whole lot. If we do the right thing for bull trout and tell the people of Idaho with a straight face why and how we are doing it, the people of Idaho, I believe, will support it. But we have to tell them with a straight face in words they understand. This means no B.S. and mumbo jumbo. I don't mean everybody is going to support the protection of bull trout, but the majority of Idahoans, I believe, will. It is not just my gut. I've done research on this. People can disagree with it, but you know we are going to be fighting anyway.

When it comes to Idaho's salmon and trout, all of us have heard the stories. You should have been here back then. We have also all seen the old black and white picture of the big salmon or the big trout, the smiling faces of the kids or our grandparents or what have you. We have all seen it. It's all throughout the Northern Rockies. It's in the old lodges where we stay. Most recently, I was up at Redfish Lodge for a conference, and there was this classic, old picture there of sockeye, hanging from a stick. Those stories are about Idaho values, and the care, concern, and warmth that comes from those stories are as deep as any pool in the Lochsa River.

As I have said before, I don't think we would be here if it were not for a couple of conservation groups having filed an endangered species listing petition for the bull trout. That listing has made a lot of people uncomfortable, which is why we are all here. In part, we are uncomfortable because of lousy politics for the Endangered Species Act. It is going to help create a snowball that is going to backfire and lead to a gutted act. It is also because of the grossly inflated fears that the impact of the Endangered Species Act is going to have on the public. I believe that listing petition was very definitely the right thing to do, no matter how uncomfortable it makes us feel. To quote a friend of mine, "Environmentalists may be hard to live with, but they make very good ancestors."

It is interesting. You know I was asked to speak last, and I have the stuff written down obviously, I am going through my paper, but I couldn't help but have some things I needed to respond to. When Chief Jack Ward Thomas started in his position in Washington, D. C., it was not one he really wanted to do. (He didn't want to leave Walla Walla. He liked that town.) He sent out a memo that included three points. One of them was to tell the truth. I believe that the people in Idaho are angry for a bunch of different reason, but it's not because of management by lawsuits by environmentalists. People are angry because federal agencies have gotten so lost in hearing themselves talk to each other or talk to the public or talk to themselves that they refuse to tell the public in very clear language what's going on. An EIS is not very clear language. They are forcing us, the environmental community, to tell you or the public that spotted owls are going extinct because the U. S. Forest Service and private industry are slicking off the hillsides of the Pacific Northwest at a rate that is absolutely unsustainable. They are forcing us to tell you that 90% of Idaho's salmon are chewed up in the turbines of federal dams.

We have reached a point where we as a society have overdone it. We have overreached, and it is time we tell the public that we did that. We need to tell the public that because they will believe it if we tell them, and if we tell them in straight enough language that we are going to do something about it. I don't mean just the Forest Service or the dams or anything. We as a society have overdone it. The timber frontier is over. Manifest destiny was a good idea 100 years ago, but it is over. It is time to look in the rear view mirror. We hit the Pacific Ocean. We've got to start viewing the Earth with a little bit of humility, and another EIS won't make the public believe that we know what we are talking about. Nor will a process that is driven by providing a continual flow of goods and services.

I say that smart politics—and I'm supposed to talk about politics here—is to do the right thing about the fish. That means stop the destruction of this region's wild country, without roads already punched into it. It also, as Governor Racicot said, means a whole bunch of other things, and I agree with him on that. I also believe that it means to have the Endangered Species Act intact. It may mean that it means list the bull trout on the list. I'm not a scientist. I don't know. The literature seems pretty clear cut to me, but I'm not a scientist.

The ESA does one good thing. It put us in this room. It also, when a species is listed, makes the federal government have to follow the law and have to act. After the listing, we have to write habitat conservation plans with local, state and federal input and keep the bull trout from becoming another Idaho species you find in cans and in stories of people older than me. I've been to Red-

fish Lake. I've seen Idaho's sockeye salmon. I am sorry I didn't fight for an Endangered Species Act listing a lot sooner. Strict laws like the ESA are meaningless unless we use them, but even the strictest law will not discourage development. Development happens. Industry will and always has howled about the impossibilities posed by strict laws. It is industry's job to fight regulation. Industry will cope with protecting bull trout and other at-risk species, and industry will mightily complain about having to cope. It's their job, but they will cope. I say that in praise of industry in all forms with its ingenuity and highly-motivated people. It's time for action. Protecting bull trout is protecting Idaho's and Northern Rockies' values. Politically, it's a winner, but if policymakers disagree and say getting out logs is more important than fish, I only ask that they be honest enough to say so and let the people see if they agree.

Just talking, when we know what needs to be done, is a political loser. Talking in language that makes no sense to the public is a political loser. Herodotus has said, "Of all men's miseries, the bitterest is this: To know so much and be impotent to act."

Dr. John Freemuth: I was hoping to have 15 minutes at least for you, and we do, which is great. As you ready your questions, I just want to mention one quick thing because some of you brought up the notion of the public. We have just finished our sixth annual omnibus policy survey here at BSU, and now this is going to be a little more relevant to those of you from Idaho. We asked a bunch of environmental questions this time. There is stuff in there for just about everybody in terms of what the public thinks about salmon, about environmental protection versus economic growth. We'll be coming out with that pretty soon, not that it is going to change anybody's opinions or anything like that, but it may answer a little bit about where Idahoans are on some of these complicated issues.

With that, in the time we have remaining, Iwould like to serve as the moderator in terms of recognizing a hand when it comes up. When you do that, talk loudly enough in this small room for the panelists to hear you. They can respond while sitting here. Their microphones are on, and again, we don't have that much time, so try to keep it to the point and not in terms of a polemic. A short polemic of a couple sentences is o.k., but not too long. So, with that, I see a hand. Go ahead.

Audience: I have a question for Mr. Spear. In your recommendation, what do you mean by "the threats are imminent"?

Mike Spear: The word "imminent" just simply means the risks are out there now. The situation exists. It's been there for many cases for a long time due to past practices, so it's not something that may occur in the future. It's basically already there.

Audience: Do you think logging poses the only risk to bull trout?

Rick Johnson: I'm the one who brought up the logs thing. I would say there is definitely more to it than that.

Steve Mealey: And Dale, I would certainly agree. I think we are talking about functioning watersheds and their multiple-use activities in every one of these watersheds. You being from Potlatch and having a particular concern, I understand that. But it's much, much broader than any single industry. There's no question.

Rick Johnson: At the same time, one of the biggest things I believe we can do for bull trout is to be protect habitat. One of the ways we protect habitat is to not log it.

Paul Brouha: I think it's fair to say, though, too, that whether we all like it or not, what's going on in part here is a pretty fundamental debate over what our forests are for. That's what's going on. The bull trout is part of it. We are having a big, societal argument about what our national forests are for. The old consensus, and I don't mean consensus in terms of 'I agree with you' but the old societal position on what forests are for has broken down, essentially, and that's what's underlying a lot of this. Indeed, for most public lands it has broken down, I think.

Steve Mealey: John, I want to respond to Dale's question, and I want to repeat something that Paul said. That is, although we usually resolve these discussions by saying science somehow becomes a sidebar, when these values issues have to be resolved, probably for the first time in the Upper Basin, as well as the Eastside, as we do the scientific assessment, we are going to see information displayed in different ways. I think that science is about to play a very different role than we expected when we began to look at information across broad, broad landscapes. I think when we talk about things, such as fish versus logging and that kind of stuff, I am not so sure that's going to be as relevant as the new information will allow us to see risks to ecosystem on broad scales. I think we are going to be seeing the whole question of risk very differently than we have before. Frankly, I believe that we are going to see risks that we didn't expect, and I think that will probably cause us to take a new look at some of our old assumptions. I welcome that, frankly.

Audience: How near are you to meshing your "preferred alternative," Option D, with the Idaho and Montana strategies?

Dave Wright: We've done an assessment of Option D that we selected versus the Idaho conservation strategy as it stands right now. Basically, they are very close to being the same. The only difference between the two is that the Idaho strategy is primarily bull trout, and we have included all of the native fish species. I think we are very close. In my discussions with Montana, it is very basically the same approach. I hate to draw a conclusion that one is better than the other right now. I think all those processes need to work their way through. What I am confidant about and feel good about is that I think there is definitely solution space out there in which we can bring these things together.

Mike Spear: I would add that the issue has both a substance aspect to it, and that is, what exactly do we do on the ground and also from our ESA notion a procedural aspect, one of timing, putting things together, deciding how to form agreements and how they fit into the federal planning efforts, how they combine. I think, as Governor Racicot said, perhaps one of the key elements of all of this is that the affected parties, I think in most situations now across the four states, are all engaged at local or state levels and are all contributing. I would say in answer to an earlier question as well, that the situations differ across the states as to

what the key issues are. Those issues of harvest and hybridization have to be dealt with, in most cases, largely by states. All of these plans will take a little different form, and exactly how we might bring them all together is a question to be looked at in the very near future.

Audience: Mr. Wright, how can you explain the fact that there will have to be very little significant change in the native and inland fish strategy. You have the chart there, and you said, "I think that we can complete our objective and there would be very minimal consequences." How do you explain that?

Dave Wright: We asked each national forest to run a screen against all the activities that they had in those priority watersheds, and there were certain criteria that they had to go through as to whether or not they were creating undue risks to the habitat. We brought every project in the Columbia River Basin through that screen inside those priority watersheds, and the information I gave you is a summary of what each national forest reported as far as impact.

Audience: Right, but how...I mean fish are in crisis. How do you explain this. Why can so little have such a big impact?

Dave Wright: That's a good question and I think one of things we are beginning to see in the last three or four years. Our projects are beginning to be designed outside of riparian areas. Folks have been doing that naturally now. I think that's part of what we are seeing.

Audience: Does that include any...how much recovery are you aiming for?

Dave Wright: In the interim strategy, we are not aiming for any recovery. Our strategy is to maintain the existing population we have over the 18 months. The recovery strategy will come into place in terms of the EIS efforts.

Audience: In your graphic, Mr. Wright, you showed that Idaho and Montana are close to getting conservation plans together. But you have question marks for Oregon and Washington. Do you have some idea how quickly those plans might come forward and what that means to the possibility of litigation.

Dave Wright: In my discussions with the Governors' staffs in Oregon and Washington, they are working on some strategies at this point in time. They are nowhere near as far along as Idaho's and Montana's as it was explained to me. Their primary emphasis right now has been the anadromous fishery, and that's where the bulk of their efforts are right now. But they have very similar concerns as the Governors of Idaho and Montana have, probably almost identical. It's just a matter of how much energy is given to bringing forth the product. They want to, and they are working on some stuff.

Audience: How do you intend to achieve concensus and to handle the polarity that exists now on what to do?

Steve Mealey: I'll just respond quickly. It's very hard to speculate about that. There's no question right now that there is wide polarization simply because the science products are not on the table, and we haven't produced a draft yet, so people don't know whether we are talking about a field mouse or a gorilla. My sense is that when the science products are integrated and displayed in ways that people can see them and when they see how we've used the science to display alternatives to resolve problems, my hope and my expectations are that people will say, "My goodness, yes. That makes sense." And there is a convergence. That's hopefully not overly optimistic. I do hope that happens.

One other thing I want to say is that a key part of finding common ground is re-stating values issues in terms of empirical statements of fact. That is, people can fight until hell freezes over about whether something is right or wrong or should or should not be, but if we can re-state those issues is terms of empirical information, that's the way to get to "yes," if you will, and I hope that we can do that, and I hope that good science—science we haven't had on the table before—can help us do that and that we can have resolution in that way.

Audience: I certainly hope you are right.

Steve Mealey: One of the things that makes me hopeful...A couple of days ago I was in Philipsburg, and that's a very small county, as I said, 2,500 people. They were very concerned and hostile, and I think going to that town, they are concerned about private property rights, they are concerned about water rights, they are concerned about all kinds of motivations. But to put reasonably solid information on the table made a lot of those expectations and fears go away, and, hopefully, the climate is much better to make good decisions and cooperate.

I can understand your feeling as you do. The thing that I would assert is that scientists believe that facts are friendly. The problem I think that we were involved with 10 to 15 years ago was that we-ologists talking to -ologists. We have now everybody talking, and I think we are talking to line officers. If you look around this room, we've got the regional foresters here. We've got the Governors here. That didn't happen 15 years ago, and that's why I think the process is very hopeful.

Dr. Freemuth: I think we have time for one more question.

Audience: Well, I have two questions. Both are for Mr. Dave Wright, and Dave, you talk about an eighteen-month period. Is there a final cutoff date or does your interim guideline continue until the EISs are final?

Dave Wright: It would continue until the EISs are final.

Audience: Maybe longer than 18 months, possibly. Then secondly, it was either you or Steve who talked about the changes in Federal Advisory Committee Act (FACA) and how the Forest Service could now better work with a broader public. Could someone give us a little description about how we can get into that?

Steve Mealey: I did mention that. Let me just say that Senator Kempthorne's unfunded mandates bill provided a provision that exempted local, state, county and tribal elected officials from FACA. The real restriction was that federal agencies could not accept advice or recommendations from them. We now can do

that, so we are working on a memorandum of understanding, for example, with the Eastside Coalition of Counties that allows us to work with the representatives of the counties in a way that sort of takes away the glass window between us and allows us to be fuller partners. We can now do that with the Governors' offices, and we hope that we can do the same things, which means that we can be better partners.

Dr. Freemuth: We are out of time, unfortunately. I know that there were at least four or five more hands. I think that we are going to put another piece up to the puzzle, Governor.

Chairman Andrus: That's right. Let me thank you for staying through the session.

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SEARCHING FOR SOLUTIONS: SOLVING THE BULL TROUT PUZZLE

PANEL TWO: "Survey of the Biological Landscape"

Dr. John C. Freemuth: The topic of this second panel is a survey of the biological landscape. Our panelists--and again I draw your attention to their biographies in your program material--are Fred Goetz from the Corps of Engineers, Dr. William Platts of Platts Consultants, and Bruce Rieman of the Forest Service. They will speak to you today in the order of Dr. Rieman, Dr. Platts, and Mr. Goetz.

I stand before you as a political scientist, which is something of a non sequitur. I'm not sure we are scientists at all in the sense that it took us 20 years to determine that the number one factor that explains why you vote the way you do, if you vote, is your parents. So with 20 years of that kind of science, I don't know.

Less humorously, though, to show you the problem of integrating science with policy, how would you feel if I, as a political scientist, said, "Well, gee, I know more than you do about politics, so my vote ought to count 10 times more than yours does," or perhaps, "Let me tell you whom to vote for." Of course, you'd tell me to take a flying leap as you should.

Nonetheless though, I think the question here is that science is obviously a necessary condition to resolve these issues, but apparently it is not a sufficient condition. How we integrate science with our political landscape may be the underlying bedrock issue in all environmental politics.

So with those introductory remarks, I will turn the podium over to Dr. Bruce Rieman of the Forest Service, who will give you an introductory overview of some things he knows about bull trout and other issues more general. Thanks.

Dr. Bruce E. Rieman: What I'd like to do today is to give you a quick review for those of you who are biologists—and perhaps a primer for those of you who are not—of extinction, of conservation biology, of some of the ideas that are coming out of conservation biology, and of the theory that's involved with these problems. I'd like to talk about the processes and the pathways that lead to extinction, and in that context I'd like to place bull trout so that we can get some idea of what the problems are, what questions we have, and what this mess is really all about. I'd like to perhaps give us a common basis of understanding.

Now, I'm not here to argue that bull trout should or should not be listed under the Endangered Species Act. I'm not a student of the Endangered Species Act, but I am a scientist, and I'm interested in seeing that science is used in this discussion and that we use the best information in this discussion wherever we can. So I hope that, over the next day or so, we get a chance to look at the information that's available, to figure out what's good and bad, and to determine what we can take home and really use to try and solve this problem.

I want to start off with a bull trout. We haven't seen a bull trout yet, and I suspect that many of the people in this room have never seen a bull trout. This is a bull trout. This is a large fluvial or migratory adfluvial adult, depending on what system it's in. This is the kind of fish that fishermen get excited about. It represents the charismatic side of bull trout conservation.

This is also a bull trout. This is also a mature adult. This is one that few people will ever see unless you spend a lot of time wandering around in some pretty remote streams with your head under water. Both of these fish, the charismatic one and this one, are very important. We have to conserve both of these if we're going to conserve what bull trout represent and if we want to have the pieces that make these populations capable of persisting through time. I'm going to talk more about that, but I thought it would be useful to have a picture of what it is that we're talking about.

What I'd like to do then is to start off with some ideas about extinction. Now, when people typically think about extinction, they often think about the loss of an entire species, but extinction can occur at a variety of levels. There's a hierarchy of biological organization that we're interested in. So we can have extinction at the species level; we can have it at the subspecies or at the level of the races. Certainly we're interested in these levels.

When we talk about salmon, we're dealing with fall chinook salmon in Idaho, and we're dealing with sockeye in Redfish Lake. Even though those species occur over a wide range, we're dealing with a smaller group of those animals that we're very concerned about. We may be dealing with regional populations; we may be dealing with local populations. We can see this kind of structure with bull trout if we look carefully at what we know about them.

We know that we have bull trout in two major areas within the United States: the Klamath River Basin and the Upper Columbia River Basin. They are also in some of the Lower Columbia, in tributaries to the Lower Columbia, and in some coastal tributaries. The two major groups here that are distinct in the Columbia have been isolated for an extended period of time. Genetically, they are very different; evolutionarily, they have a different history. So we see those levels of organizations that might approximate the subspecies level immediately. But within that we also see finer levels of organization. Within the Boise River Basin, for example, we have a self-contained group of bull trout. Those fish do not mix with the fish in the Payette River Basin or the Jarbridge River Basin. What happens in the Boise River Basin is totally dependent on what's going on within the

Boise River Basin. That population or that group, that regional population, is on its own. But within the Boise, we also see finer structure. We see local populations. The individual watersheds that support local populations produce fish that represent a finer level of organization that we can also recognize when we go out there and start looking. Extinction can occur at all of these levels, and it's really these two lower levels that I want to talk about because I think we need to be concerned about.

Local extinctions. The cumulative result of local extinctions will lead to a regional extinction, and the cumulative result of regional extinctions may lead to higher extinctions. So if we don't do our job here, we've got problems on up the chain.

We're also interested here because this is what represents the biological diversity and the function of ecosystems. So when we're talking about the Boise River ecosystem, we're talking about conservation of pieces that look something like this.

Now, if we think about extinction, there are different pathways, different things that influence the risks of extinction. People will characterize those as deterministic, as stochastic, and sometimes you'll hear people talking about genetics issues. I'm going to focus on these first two and try to give you some idea of what we're talking about. Really the genetics will influence those two pathways or those two sets of processes, but ultimately populations are going to go extinct through deterministic pathways or stochastic pathways.

So what do we mean by that? What are we talking about? These are big words. We're talking about some fairly simple ideas that might break down into some cartoons like this. If we look at the lower part of this figure, we see this declining trend in number over time, and that could represent a deterministic extinction or a deterministic risk. Essentially we're talking about the balance of birth and death. So if birth rates and death rates are roughly equal over time, the population is going to remain fairly level; but if the death rates overwhelm the birth rates, that population is going down.

We do things in the environment that change that balance. We increase sediment in streams; we increase water temperatures; we increase fishing pressure. All sorts of things out there lead to an imbalance. If we change the environment so that it's no longer suitable for a species like bull trout and if that change occurs over a long enough period of time, that population is going to go extinct. We would call that a deterministic extinction. This would be evidenced by a long-term trend over several generations, a declining trend in populations.

We know a lot about that kind of extinction; we've been dealing with that for some time. Much of the work that fisheries biologists do is focused on trying to shift that balance towards the positive side. We use fishing regulations; we use hatcheries to try to mitigate mortalities that occur during early life stages; we try to mitigate habitat change; we try to prevent toxic materials being released in the environment. All those jobs and projects that you see fisheries people doing are essentially attempts to move that balance between birth and death to the positive side of the ledger. So we understand these risks. We actually believe that much of the extinction that has gone on with species like bull trout is a result of that process. We've simply changed the environment to the point that it's no longer suitable habitat, the death rates overwhelm the birth rates, and the population disappears. We can understand that.

Now on the other side of the coin, we look at that top figure. We can talk about stochastic processes. What is that? Really we're talking about random processes.

Populations vary through time; they bounce around in numbers. Birth and death rates are going up and down all the time from one year to the next, so populations bounce around. There is no such thing as a stable population and certainly not a stable bull trout population. These populations vary. Some of them vary a lot through time. That variation from one year to the next is driven by environmental variation, by cold years and warm years, by high flows and low flows, and certainly we see the example of that. This year is very different from last year. That will make a big difference in the numbers of bull trout in many of the streams in this area.

So these populations are bouncing around, and if they're bouncing around, then there's some risk that they are going to bounce to zero and may go extinct simply by chance. The risk is a function of two things that are pretty clear: the size of that population and the amount of variation. So if that population is small, the risk is greater. If it bounces more through time, the risk is greater. If we do things out in the environment that increase that variation or reduce the size of the population, we increase the risk.

Now, we don't understand a lot about these extinctions. Most of it is theory for bull trout and for other species, but we're beginning to get pieces of information that suggest that these extinctions are important as well. If we look at the information for other species, there's an overwhelming amount of information and theory that indicates that these extinctions are commonplace; they're occurring all the time, even in pristine environments. They're very important.

If that's the case, how is it that we have any species at all? How is it that all these local populations that face these risks are still around after tens of thousands of years of droughts and floods and volcanoes and forest fires and all the temporal variation that we see from one year to the next? Well, there are other things going on in populations that seemed to be important and that influenced these risks of extinction.

One of the words that you'll hear tossed around a lot in conservation biology now is "metapopulation," or a regional population of populations. The idea is that these local populations don't exist in a vacuum; they're part of a larger system. Essentially, the risk of extinction in any local population is a function both of the conditions in that local watershed and of its context and its relationship to other populations.

So within the Boise River Basin, we have a number of populations that might be represented by these circles. Some of them are strong, some of them are weak, and some of them face high risks of extinction, and some of them may actually go extinct. But the whole system maintains itself because they're not all faced with the same risks at the same time. So if we have a population over here in the left-hand corner that has a high risk of extinction through deterministic or stochastic events, it may actually persist because surplus individuals move in from these other streams and support that population. It might go extinct, but it could be refounded by those animals moving in and replacing that population. Again, because we don't have all these populations doing the same thing at the same time--spatial diversity, if you will, not all the eggs in one basket--we have a mechanism that minimizes these risks. So if local populations are destined for extinction, at least there's a system here that minimizes that

risk or replaces those populations, allows them to persist over extended periods of time. We're finding that these things appear to be very important for bull trout.

We had a big fire on the Boise River in 1994 and another one back in 1992. A number of streams burned very intensely. One example of this is Sheep Creek. On the upper end, the fire burned very intensely on a major part of this watershed. This was an important place for bull trout, and everything that you see in yellow was almost sterilized. There was nothing left in there as far as fish are concerned, an important bull trout population throughout the system. But what we found was that over the course of two years, bull trout moved back in to that upper segment of the stream, repopulated it, refounded it very quickly, moving in from segments of that system that did not burn. So this spacial diversity, this ability for things to happen in different places at different times was very important in maintaining this population in the face of what could have been a catastrophic event.

Now, there are other mechanisms that also seem to be important for the maintenance of populations, and one of these is life history. Now when I started, I showed you a picture of a big bull trout and a little bull trout. These two forms are different life histories; they do different things throughout their lives. Now what we typically find is that in many systems, we have a migratory population or a migratory form and perhaps a resident form.

So as we look at that upper figure, we might think of that as a life cycle: A fish is born, it rears in the stream, it matures and spawns and finishes that life cycle. In the case of a resident fish, they do that entirely within a local stream.

Now we have some fish that move out of that system as juveniles, move down into a larger river or larger lake, mature in that system, and then go back to the tributary to spawn—a very different life history.

These guys that move out of the system grow very big. There's lots of food out in those lakes and those rivers. The guys that stay home in those small streams don't grow as fast, and they face different risks. Those fish migrating through the system have to go through the gauntlet of fishermen, predators, and other threats not faced by those fish that stay home. Those fish that leave the system get a big payoff because they get big, they can produce lots of eggs, and they may refound or build populations very quickly.

And you see that these two forms exist in many of the systems we're dealing with. We find both of them in the Boise River Basin, and again we have one that stays up in these upper tributaries and one that moves out. This diversity in life history represents a diversity in time--not just in space, but in time--that is also very important for maintaining populations and minimizing the risks of extinction. Again we see a good example of this from the fires in the Boise River Basin.

This is Rattlesnake Creek, and again, there was a very intense fire on the upper portion of Rattlesnake Creek. That upper section of the system was virtually sterilized, so the bull trout in 1992 were just about gone from that system, but what happened was that we had a migratory foreman there. The adults were not in the system during the time of the fire. They returned to spawn the next year when they were supposed to spawn, created a new year class, did it again and again, and the population is right back at it. So this life history seems to be very important. That diversity is a critical element in maintaining or minimizing the risks for these stochastic effects and may be very important in minimizing risk for lots of other things.

So that's a basic understanding of how populations go extinct and the things that seem to be important in minimizing those risks.

Well, so how do bull trout fit into this? What's the big deal? Well, part of the problem is that we are seeing extinctions with bull trout.

This picture no longer exists; you can't see this scene in many systems. This was from Priest Lake. Bull trout are virtually gone from Priest Lake now. The same story can be told in Lake Chelan and Wallowa Lake. We see trends that are leading to a lot of concern about this loss. In Flathead system, in the Coeur d'Alene system, and in a number of other places, we have lost this fish. So we see evidence that this form is disappearing.

We also see evidence that throughout the range, a number of local populations and regional populations are also gone. It's very difficult to put this information together and, as people dig up that information, to go back and do the replicated sampling and follow up. But we were able to document that there is a growing number of places where bull trout did exist but no longer exist.

Twenty-two percent of the known regional populations in Oregon are believed to be virtually extinct or extinct. A large portion of those populations are on the verge of extinction.

In the Coeur d'Alene River Basin in Northern Idaho, bull trout used to be widely distributed, and during the last two years, we have inventoried over 60 streams very intensively and could find no fish. That story is repeated throughout the range. So there are lots of places where we know that we are losing populations and that local extinctions are occurring. That's a cause for concern.

Now, we also see the effects of these deterministic sorts of extinctions. We see the results of cumulative effects. These are data from Priest Lake. This is one of the most dramatic collapses of a bull trout population that we can document. Over a period of time--roughly 20 years beginning in the late 1970s-- that population declined very dramatically, and the bull trout are still in the system. They can still be found--a resident form--in some of the small tributaries, but they are virtually gone from that system now.

This is the result of cumulative effects of the introduction of predators and competitors such as lake trout and brook trout and of dramatic increases in fishing pressure in the late '70s that also hit bull trout when other things were changing. The loss of other species, the changes in habitat in those tributary streams, and the cumulative effects of a changing environment led to this deterministic trend in populations, which, if it isn't reversed, will ultimately lead to extinction. So we see the hallmarks of these problems out there. In some cases, they are quite obvious; in other cases, the data that are available from other systems may not be as obvious.

These are data from the North Fork of the Flathead. These are red count data where we have monitored an index of the number of adults in these systems over an extended period of time. What we see is that there's a lot of noise, it varies a lot, but there also is a downward trend in these data. If you fit those with statistical models, the trends are negative. Some of them are significant, some of them are not. But if you look at these data as a whole, I assure you that the combination of trends from all the

population is highly significant.

There are 28 populations throughout the Pend Oreille, the Flathead, and the Swan River Basin, which used to be one part of a very large system that is broken up now by dams. Twenty-eight populations have been monitored for an extended period of time; 22 of those populations are declining. That pattern of decline is highly significant in anybody's analysis, and the pattern then is again probably the result of the cumulative effects of a changing environment. So we have the clues out there that tell us that we've got some problems. We're seeing extinctions; we're seeing these trends that are a concern.

We're also concerned that we're starting to break apart the system. We're starting to take apart the safety net that we have been talking about. We are starting to break the ties among some of these local populations so that migratory form is not as abundant as it was in many systems. We are changing the availability of habitat. In some cases, we're eliminating those intermediate populations, so the stones or the stepping stones that led from one population to another are disappearing. We're starting to isolate and break apart this safety net.

We can see the evidence of that in habitat change. This is good bull trout habitat. We might have found fish in here. Historically, in places like the Coeur d'Alene, we've seen dramatic changes in those streams. This is not good bull trout habitat. The scour effects that are occurring here are probably pretty damaging to fish that spawn in the fall.

So we're changing habitat, we're losing pieces, we're losing stepping stones. We're starting to break up this mosaic. In some cases we're losing flows, and a lot of gravel degradation is building up in the bottoms of these streams. The flows can go subsurface. It's very difficult for a migratory fish to migrate over gravel without any water in it. That's a problem, breaking up these populations.

In some cases, it's very obvious. We've got a lot of irrigation diversions and a lot of dams in the system.

In the Bitterroot Basin, irrigation diversion seemed to be a very major player in the loss of a migratory form. We've done a lot of radio tracking work there that's coming out in a new master's thesis. Many of those populations in that system now are strictly resident. The migratory form that was once abundant in that system doesn't appear to be there anymore. We're losing that tie.

At the same time, we're starting to shrink those populations and perhaps increase the risk from these stochastic effects. Brook trout may be playing a big role. There's a lot of emerging evidence that suggests that brook trout can be a problem for bull trout. It's hard to tell the difference between them. It's also hard for the fish to tell the difference. They tend to breed, they hybridize, but often it appears that the hybrids are sterile. Brook trout reproduce more quickly than bull trout, and they may push them out of the picture simply by that advantage.

Well, we've got brook trout throughout a big part of the range, and the picture that we can start to paint is that where brook trout occur, they often push or appear to push bull trout into a smaller and smaller corner. So they're reducing the size of those populations. They're also isolating those populations. They've got further to travel to connect. So we're breaking up the ties, and we're shrinking those populations to smaller pieces of the environment. That's going to increase the risks.

So our concern is that historically we probably had a mosaic of habitat where we had these brown areas that might represent the best habitats in many places, and those were spread throughout the system. We had strong populations that were able to resist catastrophic events--floods and fires and all kinds of things that we might throw at them. If we had weaker populations in the lighter blue areas, they could be refounded or supported by those stronger populations. If we had no fish in some of the other areas, perhaps they'd recover in time, and they, too, could support bull trout somewhere in time.

But much of what we're doing on the landscape is changing that picture to one that looks something like this. We still have a lot of strong bull trout populations if you just look at the numbers. We still have bull trout widely distributed, but in many cases they're fragmented, and they are isolated. If that's the case, our risks of extinction are pretty high. Even if we were to lose no further habitat, we will continue to see extinctions in the range of bull trout even if we stop the loss now. So without being able to maintain that mosaic, without that safety net, the next time we have a 1964 storm, the number of extinctions may go up dramatically. We don't know for sure, we don't know where, we don't know when, but it's probably just a question of time.

So that's the overview I want to present, and I hope we'll have time for more questions and discussion later on. Thank you.

Dr. William S. Platts: Both Paul Brouha and Dr. Rieman really pressed the science of the issue, and I do also—total science, looking at all sides of the science.

Because I was born back in Lake Plasticine, I have a real interest in my heart in always going to the historic record to see if the answers are there. I think the historic record can tell us more of what's going on than anything we've got, especially on a species that has been so lightly studied as bull trout. So in a quick two or three months, we tried to dig up the historic record. We did this in the context that the Fish and Wildlife Service had found bull trout warranted for listing over their complete range, not in pockets or not that where Dr. Rieman was talking about, but over their complete range.

So the historic effort that we put in was to try to isolate what was happening over their complete range in the Columbia River Basin, and we tried to come up with answers to three questions. First, are bull trout populations presently stable or are they declining over their complete range? Second, if bull trout has declined over their complete range, when did these declines occur? If we knew when bull trout declines occurred, we could pinpoint the cause. As you'll see later, a lot of our bull trout populations had declined by the turn of the century. If we knew when the declines come, we could then pinpoint the cause. The third and most important question, however, that we really wanted answered is, does the historic record support the listing of bull trout over their complete range?

So to try to answer these questions, we intensely searched the Columbia River Basin, every agency, every university, every library, every file, and every individual that we could get a lead on. We did some very intensive searching. There's still some data out there, but we feel that we've gone a long way with it and that we're at a point that we can display the historic record.

I'm going to use some slides to unfold the historic record that covers their complete range because that's the only question before us today is: Are they warranted to be listed over their com-

plete range? So if we could have the lights, please.

Bull trout habitat. The Indian nations did not leave a written record on the status of bull trout during their 10,000 to 40,000 years of coexisting in basins occupied by bull trout. They left us nothing to go with in the way of records.

The first opportunity to determine the written record of the status of bull trout populations, therefore, is in the journals of Lewis and Clark. Their journals, however, are mute on the status of any trout although they do discuss salmon quite a bit.

The next recorded opportunity is located in the journals or diaries of later explorers and trappers who did keep some pretty good accounts. The Hudson Bay, the Fremont, the Peter Skene Ogden journals, the diaries of Osborne Russell and many other trappers were reviewed, and although we went through all these journals and although these trappers made their living from streams, they expressed little interest in trout, and they left little information concerning trout populations.

Now, this complete lack of information prior to the turn of the century leaves us a really large void of information on what was really going on, and I really wonder what was going on because, at this time, the population of over 20 million beaver were annihilated in the Western United States, 60 million over the United States, about 120 million in Canada. So over thousands and thousands of square miles, we eliminated beaver who were controlling streams, and these streams started unraveling. This is probably the first major impact from humans that bull trout had to suffer through, and it was probably quite outstanding. I would like to have seen it; I was pretty young at the time.

The next major land use effect occurred when mining began prior to the twentieth century. Gold, silver, and bull trout occupied the same streams, and localized populations of bull trout were eliminated or stressed.

Bull trout always had to contend with fire. The Montana Fish and Game Commission reported that the 1910 fires completely annihilated fish populations in selected streams and rivers. Bull trout, however, as Dr. Rieman has well explained with his research, handled the impacts extremely well over time, and they will continue to do so in the future. In all fire streams that I have looked at, bull trout have done quite well.

Livestock grazing and mining increased dramatically by the 1860s. Grazing received little management control until after the mid-1930s, after the Taylor Grazing Act. Today, grazing still affects some bull trout populations.

There's little doubt that 50 years of stocking exotic and native fish in bull trout waters affected bull trout populations. The degree of impact over the range is not documented. Much of the impact from indiscriminate fish stocking probably exerted itself prior to the 1930s, prior to any bull trout data being available for analysis. Major stocking of hatchery products occurs in bull trout waters today. So we really don't have a good handle on how the indiscriminate stocking of fish over the years has affected bull trout populations.

Irrigation return flows, as Dr. Rieman talked about, have affected bull trout populations. They're still being affected to a degree today.

Around the turn of the century, small logging operations affected localized populations through both harvest and log drives. Logging increased when heavy equipment became available after World War II. This heavy equipment provided the ability to build roads and log in steep terrain, moving further into bull trout habitat.

Now, the earliest reliable bull trout data appeared in the 1930s, about 65 years ago. Of the 969 waters, 626 had no data related to bull trout. This leaves a large void over a large land base. 298 waters had limited data but insufficient to identify population trends, and only 45 waters in the Columbia River drainage we felt had sufficient long-term data to follow population trends over time.

Now, because we're real limited on time today, I'm just going to talk about a few examples in each of the four states, but they're fairly representative of what has happened throughout the West.

The state of Idaho. 312 bull trout waters were identified in Idaho. 218 of these waters had no data, and 79 had limited but insufficient data. Only 15 Idaho waters contained reliable trend information.

Rapid River, Idaho, supports both resident and fluvial bull trout that are harvested. Annual trout numbers and migratory bull trout show a small decline from 1973 through 1993. This decline is not statistically significant. Therefore, we conclude that this population is not in a state of decline at this time. We couldn't prove it's in a state of decline at this time.

This reach of the South Fork of the Salmon River is in near natural condition, and it always has been. The reach is occupied by almost 100 percent bull trout. The population curve shows a slight decline over the 11 years of record, but the decline is not statistically significant. We conclude that the population is stable and going through high natural cycles and the fluctuations that will be expected in most natural bull trout populations. They vary; they are a very widely fluctuating species, a characteristic that has to be considered in the analysis.

Bull trout populations in Alturas Lake in the Salmon River drainage appear to be on the increase during this time period. This upward trend, however, is not statistically significant. We conclude that this population was not in a state of decline during this period.

Of nine streams with annual red count data in the Clark Fork drainage, eight showed declines over time. The second column is whether it's significant or not, whether you can really say it's a significant difference, and we went with (=) .05. That means you're going to make, we hope, an error of less than five percent. So like with Rattle Creek, it is highly significant. So two of these streams are declining in bull trout populations, and it is significant. Char Creek is one that happens to be on its way up.

We conclude that these populations may be in decline, and they need real close annual monitoring for a few years to really track what's going on.

These three streams along the north shore of Pend Oreille Lake showed declining red counts, but none of the declines were statistically significant. We conclude that it's not possible to determine if these populations are stable or declining at this time. We highly recommend monitoring continue.

Three streams along the eastern side of Pend Oreille Lake have increasing red count trends. Only one stream showed a decline. None of the trends is statistically significant however. We conclude that these spawning populations are not declining at this time and that they're probably stable.

The state of Montana. 441 bull trout waters were identified in Montana. 332 waters had no bull trout data; 95 waters had limited but insufficient short-term information. Only 14 contained

sufficient long-term data to allow interpretation of trends.

The Middle Fork of the Flathead River drainage had four streams that showed weak but insignificant declines in annual red counts. We conclude at this time that it's not possible to determine whether these populations are declining. These populations need close monitoring over time.

The North Fork Flathead River drainage had four streams that showed weak but nonsignificant declines in annual red counts. We conclude at this time that it's not possible to determine whether these populations are declining. They need to be very closely monitored in the future.

Spawning bull trout populations in Swan River drainage streams having sufficient long-term red data are probably increasing. All populations show an increasing trend, most with high statistical significance. We conclude that these populations are not declining and are probably increasing.

Bull trout populations in Hungry Horse Reservoir, as tracked by harvest data, show an upward trend during the period of record. The trend is not statistically significant. We could not find the data to go further on this trend, and that's why it's missing. We do, however, conclude the population is not in a declining trend during this period.

As we move through this analysis, what we're trying to do is find out when the declines started and where they started.

The state of Oregon. 95 bull trout waters were identified in Oregon. We searched each one of these 93 waters for data. No bull trout data were located on 13 waters. 73 waters had some short-term data, but the data was insufficient. Only seven waters in Oregon had sufficient data to track bull trout population trends over time.

Twenty-four years of records show an increase in the catch of bull trout in Wallowa Lake. The increase, however, is not statistically significant. We conclude that this population was not in a state of decline during the period of record. That doesn't mean it's not in decline today if we could find some data.

Bull trout made up a very low percent of the catch in Beulah Reservoir from 1959 through 1981. The catch implies an increasing population trend, but this increase is not statistically significant. We conclude this population is not in a state of decline during the period of record.

Bull trout catch in the Walla Walla River increased from 1960 through 1982. The increase, however, is not statistically significant. We conclude this population was not in a state of decline during the period of record.

The state of Washington. 63 bull trout waters were identified in the state of Washington, and we searched each one of them. Only three waters did not have any data, which is quite remarkable. 51 waters, however, had insufficient data, and only nine contained sufficient long-term data to allow trend interpretation. All bull trout waters in Washington, except the one with long-term data, have increasing bull trout trend curves.

The bull trout red counts in Box Canyon Creek show an increase over time. This increase, however, is not statistically significant. We conclude that although red counts are low in some years, most years the spawning population is not in a state of decline at this time.

Bull trout annual harvest from Rimrock Lake shows a slight increase over time. This increase is not statistically significant. We conclude that the population is not in a decreasing trend at this time.

Bumping Lake. Bull trout harvested from Bumping Lake show an increasing trend. This trend is not statistically significant. We conclude that the bull trout population is not declining at the present time.

Bull trout harvested from the Naches River show a slight increase. This increase is statistically significant. We conclude that the population is not in a state of decline and is probably increasing.

So what I've done is give you some examples of what the data is really showing, of what the historic record is trying to tell us. We hope we can improve on the historic record. From what we've done so far, we've drawn some conclusions. It's a review draft; conclusions are up to be changed. But this is where we're throwing our chips at the present time.

Bull trout experience large population cycles with high unpredictable annual fluctuations. They're very wild fish. This high variability over time makes it necessary to have 10 years and preferably more of consistent data to determine true population trends. Biologists running with short-term trend data have a high chance of developing erroneous conclusions.

Relatively few streams in the Columbia River Basin have sufficient long-term population information to determine bull trout status. It's very true the bull trout have been the forgotten and neglected salmonna, and it's good that they have been brought to the forefront. Now I think we'll do something with them.

Probably our most important conclusion at this time, one that the historic record strongly supports, is that bull trout populations are not in a general state of decline throughout their complete range, and that's a very key point. We've got to remember that. The historic record should be the basis for most of the decision-making.

Each state containing bull trout should develop and implement a bull trout conservation management plan. Once implemented, bull trout will be removed from any possible jeopardy in most areas, and populations should begin to increase.

Fred Goetz: Dolly Varden are still found in the high numbers. They're almost circumPacific in their distribution from Japan to Washington. The name char in itself is very descriptive. Char means red. These animals develop a very nice red coloration as they develop their spawning condition.

Bull trout are a little different than the two previous trouts I've talked to you about. Dolly Varden are anadromous, or seagoing, in their distribution. Lake trout are a specialized species that is found only in lakes. Bull trout have been found to make use of a variety of habitats from small streams at headwaters to medium-sized tributaries to large rivers to lakes. Some may be partially ocean-going.

This is a bull trout fry. You can see their cigar shape. It will become apparent to you why it's designed this way in nature. It fills a unique ecological niche in our watersheds here in the Pacific Northwest.

One of the opinions as to why they're called bull trout is that they have a broad, flat head like a bull. Others say it's because they're obstinate, and they don't do what you want. There are different forms of bull trout as Dr. Rieman has already pointed out. On the previous slide, you saw a large migratory bull trout. These are smaller bull trout that are resident. They move only a mile or two in their entire lives.

All this previous form can be found to migrate hundreds, possibly over 200, miles in some river systems. One of the things that sets bull trout apart from many of the other fish species or salmonnas in the Pacific Northwest is that they're an apex predator or a piscavore. When they reach a certain size, if they have fish present, that's all they'll eat, and they get big and fat.

Dr. Platts commented that the historical record is something that has been overlooked before in some of the reconstructions to find out the history and status of different species and whether they be aquatic or terrestrial. One of the first things I did in my studies of bull trout, beginning about eight years ago, was to reconstruct the historical distribution of bull trout in Oregon and Washington. The rest of my talk will primarily be concerned with Oregon and Washington, specifically, with the Oregon Cascades.

Prior to the 1900s, these fish were found in most of the major river systems in Oregon and Washington. They were absent from the Pacific Coast in Oregon and Southern Washington. They're found in the Olympic Peninsula, all along the Cascade Mountain range, in isolated streams of the Blue Mountains in Northeast Oregon, in the basin and range where we have the Klamath, and in a few streams in the Upper Columbia.

As Dr. Platts has mentioned, there's a lot more work that could be done on the historical record. I've found in my survey of streams and records in Oregon only a few limited references specifically to a char. In some systems, they were found in vast numbers. They were reported to have been taken by hook, line, dip net, weir, and trap. They may have numbered in the thousands in certain river systems.

The historical record shows us that they have been exposed to a number of different suppressing factors or reasons for their decline through time. Dr. Platts has done a very good job in summarizing many of these. What was under-represented or overlooked is the fact that even the state resource agencies who were responsible for the management of this animal were partially responsible for its decline in many river systems.

There was a bounty on bull trout in many places as there was for Dolly Varden. In Alaska, they used to have a bounty of two cents for a tail. In some years in the 1930s, they brought in 20,000 tails. The problem with that method of management was they couldn't always tell the difference among the tails. Sometimes they were steelhead, sometimes they were chinook. The same thing happened in Oregon and Washington. They had bounties, but often the bounty was in the form of an incentive to turn in bull trout. Actually the agencies themselves often put weirs or traps on river systems to trap the bull trout. They would just pull them out and toss them on the side.

They also pitchforked them out of many of the falls where the bull trout would stage in hundreds of animals; they were pitchforked, dynamited, whatever could be done. They were a coarse fish, an unwanted game fish that many people felt preyed upon salmonids, the Pacific salmon in particular, which was a much more valuable animal. Only in our recent enlightenment have we found how valuable this animal is.

Getting back to the basic biology of an individual animal starting from a very early age: This is a bull trout fry. They're a dentate animal. They're found on the bottom of streams and lakes. You can see that it's a very well-designed animal and can just sit wherever it wants to. As these fish get larger, they're still found on the bottom. There's a very good reason for it, in my opinion. These fish adapt to certain ecological or environmental conditions. They're different than the trout and salmon you find in most of our river systems. Char in general have been found to be adapted to low light intensity. They can feed or hunt during twilight, dawn, and dusk as well as nighttime. In some systems in the Arctic, they can feed 24 hours a day, even in total darkness.

Their eyes are different: They're found on the top of the head rather than closer down to the sides. Their bottom form lends itself to sitting right on the bottom. Some people call them a ambush predator in the way they can just sit, wait, creep up behind something, and then ambush it from below. Often they are found in the bottom of pools under cover. I'll give you some more specific details as I go through my talk.

One of the first things I tried to do, once I did the reconstruction of the historical distribution of these fish in Oregon and Washington was to try to determine what's the best way to find where they are now. We've used methods such as creel census red counts to find where obvious populations are. I also used less obvious means and called a number of different people, old anglers, who said, "Oh, I used to catch them down in this hole down by the old mill pond." I also used gray literature. My starting point was to look in specific river basins as to where these fish might be found.

From the individual animal perspective, once I'd figured out what basin I wanted to look in, I wanted to figure out the best method for finding them in that stream or basin. So I looked at the behavior of the animal with the understanding that these fish are adapted to low light intensity and that they're bottom-dwelling, cover-seeking animals.

I did a 24-hour study that I wish I had replicated. My initial findings were that the very youngest fish, the bull trout fry, sit out in the open during the day. I found the fry coming out right as dawn approached and then disappearing at dusk.

I found a somewhat different pattern for the juveniles. One, two, and three-year-olds, come out all of a sudden, bang, right at dusk. I'd done my counts along the edge of the stream, and that's where we're seeing all these little bull trout fry. Then, right after dusk, a bunch of larger bull trout moved right in there and sat down on the bottom. They were easy to count, easy to find.

So with that in mind, I compared three different methods to find the best means to count these animals. I used a day-snorkeling technique that is a traditional method for counting fish in small streams and sometimes in larger rivers; I also used night snorkeling for the obvious reason that I showed you in the 24-hour count; I also used electrofishing.

To describe a little bit further where you find some of these bull trout, this is a rather pristine bull trout habitat, and this is where I did many of my studies. It's a nightmare to get in there with electrode fishing equipment. Even during the daytime, snorkeling is a rather difficult way to find these fish. I wanted to find the easiest way to find these animals without breaking my neck, banging my head against the logs, or tripping over trees.

I found electrofishing very difficult for the reasons I mentioned. It's very difficult to get under cover. You're electrofishing blindly. You put this probe underneath a log, and you can't tell what you're catching because it doesn't pop right out at you and tell you, "Oh, I'm a bull trout; here I am."

During night snorkeling, we started right at dusk, and we usually went from dusk till about midnight, using little hand-held flashlights. We found that the density estimates that I got from night snorkeling were equal to or often greater than electrode-

fishing density estimates and provided a fairly good correlation as well.

The habitats where I was studying bull trout were very complex. I assumed there were going to be fairly good numbers of bull trout. There were very large areas to cover. We sampled ten different streams to find density bull trout, using day and night snorkeling, once I confirmed that night snorkeling was as good as electrode fishing. The day snorkeling estimates that I got for each one of 10 different streams proved that night snorkeling was a better method for counting these fish, at least in the Oregon Cascades where there are very cold streams, where there is very abundant cover, and where it's very difficult to find these animals.

The significance of this is that, in the future, when people are developing sampling methods for bull trout and are trying to determine the presence or absence of these fish, if they're near a timber harvest, if they're near a road building project, it may be too quick a judgment to say you don't find anything if you used day snorkeling. I would argue with your judgment on that.

I think there's a lot more work that needs to be done in this arena. I did this in many cold-water streams. Bull trout may be more apt to hide under cover during the day when it's cold out. Just like us, they need shelter; in colder water, they're not as active. But during the day, the bull trout is right in the center. This is normally what you have to deal with when you're snorkeling for bull trout in very complex habitats. They're a dark-colored cryptic or secretive coloration. It blends in very well with the cover that they like to hide under. As I said, they like low light intensity. They also may appear to want lower velocity water. If it is colder temperature, they may be conserving their energy during the day as many salmonnas do during the winter, but at night they're just sitting right out in the open.

This is a old gravel pit or a small lake. During the day, we snorkeled this lake at least two different times; we never saw any bull trout in there. But at night, we just went along the edge, and this is one bull trout that was sitting along the edge of the lake in about two feet of water. It was about 30 inches long.

So once we figured out the best way to find the bull trout, we wanted to figure out why we were finding them in those places. Let's start with where we found them. This is just a plan view of a riffle at the top, a little faster water unit. Down at the bottom is a lateral scour pool. The large objects that you see drawn are simulating wood. The little circles are just some overhanging vegetation. The triangles show where we found them during the day. We found them in faster water underneath cover at the back end of this pool where they were feeding. At night we found that they were out in the open, spread all over the place. We searched this unit very carefully, using flashlights. We looked under every log. We picked up rocks. We had people on either side of the stream working their way up. We took a fair amount of time to snorkel this unit during the day, but I only counted three fish.

At night, this is a totally different situation. These fish were in the backwater areas, moving slowly out from underneath the cover. They were very easy to count; you could shine a flashlight on them. They don't move, they just sit there.

In sampling 10 different streams in Oregon and Washington, I found that there were certain habitat types the bull trout appeared to be using more; I don't want to use the word "prefer" because I haven't done a scientifically valid test that could compare the habitat available versus the habitat used by these animals. I will say, however, that they appear to be selecting certain units. In what appear to be slower-velocity streams and complex habitats, like pools with a lot of wood and side channels, we found a lot of fry.

This figure just shows you a measure of selection of certain habitat types. They weren't using fast water. The two slowest velocity categories were used by bull trout. So what I'm telling you is these guys are bottom dwellers; they don't like light and high intensity, so they appear to be selecting areas with complex habitat that afford some cover either from the light intensity, possibly from predators. It may be a means for them to minimize their metabolic energy expenditure.

Another thing that I found that agrees to some degree with what Dr. Rieman has found in looking at streams in Idaho, Oregon, and Washington habitat unit areas is that as the habitat unit or the pool or the side channel got bigger, we found more bull trout. Dr. Rieman has also found that there's a correlation between finding more bull trout in larger streams. I found most of my bull trout in large streams with a lot of water, a lot of habitat complexity.

I found them using just about every habitat type out there that's available. I found them in beaver ponds. In one beaver pond, I had the highest density of any of the habitat units I looked at. The problem with this habitat unit is that is heavily used by brook trout as well. So in many cases we're finding competition between juvenile bull trout and adult brook trout in habitat units like this. In this situation, this beaver pond was completely filled with brook trout.

We find them in side channels that are watered up during the summer and that have a lot of complexity. They're slower in velocity. We found them in higher gradient units. We found no correlation between whether they were using lower gradients versus higher gradients. We found them in pools even in the high mountain streams, but again you see a lot of complexity in this area. There's stability along the margins of the channel, there's a lot of wood in here, so there are a lot of different habitat types at the microhabitat scale or fish scale. In larger tributaries, we found larger bull trout, larger juveniles and adult fish.

Adult bull trout will use every habitat type the juveniles use at different times in the year. During the fall or the low water period, you'll find 30-inch bull trout in small streams. Lack of water or loss of water can be a barrier at times to many of these large migratory fish.

In larger rivers, we found both fry up to juvenile or juvenile and adult size bull trout. It's a habitat type that's been lost to many of our populations. Dr. Rieman again mentioned that there have been barriers of some form or another that have prevented use of these habitat types, whether it be dams, culverts, or increasing water temperature.

These fish have a tortuous and arduous journey in many cases. They were well built for the original routes they took; now they're facing new impacts that weren't planned for in their evolution. They have had to adapt to things like reservoirs. Sometimes these adaptations are successful. If you find a good prey base in some of these reservoirs, you may actually find an increasing population of bull trout. There may be some consistency where you find introductions of kokanee into these reservoirs or lakes because they provide a very good prey base for bull trout, and you may actually find increasing numbers of these animals.

In Washington, I found the same pattern that I described from many of the streams in Oregon. These fish were associated with large wood, and if large wood wasn't available, they used other large structural elements like boulders, large rocks, or anything they could hide under that could form a velocity obstruction.

One overriding feature that I've found in these bull trout streams was that they were large, had a lot of water, and were very cold.

The distribution of juvenile bull trout, especially in the Oregon Cascades, is intimately tied to the volcanism of the high Cascade Mountains. Lava flows over the past 3,000 years have created some unique habitat types. They have actually covered old river channels or stream channels. The water still flows through these channels because the lava is very permeable or blocky. What emerges at the edge of these lava flows is the old stream. That old stream has been insulated from solar and other heating, and it comes out very cold in constant temperature. I found bull trout in some of these river systems, usually right in association with the spring-fed streams.

Unfortunately for bull trout, brook trout are very similar to them. They like colder water temperatures and many of the same habitat types. They like low light intensity, so they use cover and lower velocity waters like pools and beaver ponds.

Even in reservoirs I found that bull trout were selecting areas of colder water temperature. The only place I found bull trout in this small reservoir in the Upper McKenzie River in Oregon was below a very large spring that was flowing about 400 cubic feet per second. The only place they were found was in this arm of the reservoir.

If you look at a geomorphic scale or landscape scale, it becomes very clear where I found bull trout in the Oregon Cascades. Each of the river systems where bull trout used to be found gave access to them all the way down to the main stem of the Willamette. They migrated up these larger river systems in the fall to spawn in headwater streams. All these spring-fed streams originate in the hatched area that is all volcanic activity, and in most cases, these were old streams that were covered up. Water percolates into the ground at say 6,000 feet and, in many of these streams, will emerge 2,000 feet lower elevation, but it will be the same temperature at which it entered at the 6,000-foot elevation. It's been insulated the whole way. It creates a unique habitat type for bull trout. The same situation exists on the east side of the Cascades in the Deschutes River Basin; I found bull trout only in spring-fed streams.

These large fish are and have been very prevalent in the past. Twenty-pound fish were not uncommon early in the century. Even in the McCloud River in Northern California, they reportedly had fish greater than 20 pounds caught in the 1880s. By the 1960s and 1970s, the only fish that were remaining were resident or possibly slightly fluvial migratory fish that were only 10 to 12 inches in size. So we've not only shrunk the area of habitat, we've lost an important genetic component of this species. These fish had the most eggs. They were the hardiest animals. They could go through just about anything if they had enough water to get there.

I'm not sure how many people can see this diagram, but the idea was that the lava flows came out and filled all of these old river beds; then the springs come out right at the edge of the lava flow. That's where I found the bull trout, right at the spring source.

These streams are very stable. The dotted line across here is a typical spring-fed stream. The flow does not vary much at all compared to regular streams that have high fluctuations. There's a lot of stability in these streams. When the lava falls in the stream, it stays in the stream and creates a lot of habitat complexity.

Temperature is much the same way. This is temperature during the summer period. There's hardly any variation at all in the spring-fed streams.

Look on a geomorphic scale over the two states of Oregon and Washington. It becomes very clear that you're only finding these fish in selected areas. They're found in the highest mountain regions: the Oregon Cascades, the North Cascades, the Olympic Peninsula.

In using presence and absence of bull trout from the streams of Cascade Mountains, I found that, at lower latitudes, more southern areas of bull trout, they're found in much higher elevation. As you head north, they are found at lower and lower elevations. So it appears that something's going on here.

This is longitude versus elevation. The same thing happens at the eastern edge of bull trout distribution in Oregon and Washington and finally at the highest elevations. Going to the west towards the Pacific Ocean, you find them at lower and lower elevations. So at the very southeast corner of Oregon, you find these fish at the highest elevation; they're found up to 2,000 meters. In Northwestern Washington, they may be spawning in varying areas as low as 200-feet elevation.

These fish have run a grueling gauntlet. There have been episodes of trapping, bounties early in the century, and overfishing. The '30s through the '70s was an era of dam building, especially by my agency, the Corps of Engineers. These dams have isolated many populations. Often I've found that, in at least eight different river systems, within eight years of dam construction, whatever bull trout existed were gone. These fish were extirpated from these systems. Only in larger river basins where they have a lot of fluvial or river habitat left are we still finding these fish.

Culverts can act as a barrier on small streams. The Forest Service has identified at least a couple different situations where there's just a remnant of a bull trout population below a spring-fed stream but a remnant that had no access to the stream itself. Now they were actually trying restoration efforts by retrofitting the culvert so it's designed for bull trout passage. The passage design of culverts and dams is an area that deserves much more consideration in the future. There's been no study in this field at all to date.

Another problem we have in the Oregon and Washington Cascades, as distinct from Idaho and Montana, is flooding. Dr. Rieman mentioned the 1964 flood. In 1990, we had a hundred-year event in many streams in Western and Eastern Washington. It hosed the streams and wiped out everything that was found in there. I've personally surveyed one stream where I came back three years in a row. One year they were there, after the flood they were found two miles further downstream, but then they repopulated it two years later. So these fish do have to have the resources to repopulate these areas: otherwise we may be losing populations right under our noses.

Another problem has been the introduction of exotic salmonnas—brook trout and brown trout in particular. In the Oregon Cascades, I found that brook trout and brown trout have replaced

bull trout in over 25 percent of their original historical habitat.

Gold Creek in the Upper Yakima is a microcosm of all of the challenges facing bull trout today. This is the lower part of a reservoir. It was a natural lake, Lake Keechelus. Now it has an irrigation dam on it. This reservoir is drawn down to very low levels in the late summer, exposing most of the stream. There's no riparian cover at all. Water temperatures reach 65 to 70 degrees. Warm water species have invaded this area. There are no bull trout that reside in this formerly good bull trout habitat during the summer.

Gravel excavation for the building of Highway I-90 occurred right in the flood plain of this system. During the summer, this gravel pit now intercepts most of the water that normally flowed in the stream channel. Now it seeps into the pond, so over a mile of stream habitat dries up, effectively creating a water and temperature barrier to bull trout.

Land management practices from building homes to forestry and gold mining have effectively created a desert. Home development is still occurring in some places at an increasing rate. Salvage sales in formerly roadless areas may introduce a new problem for bull trout besides your normal development.

These fish are often very large, obvious animals sitting in small pools like this, and become very easy prey for any of our outward-bound recreationists. Poaching has been a very large problem as well as overharvesting.

The general impression I have of the historical record is that we don't know what we've lost because there isn't enough information out there. In some systems, there were thousands of bull trout; some systems had only a few bull trout. There may be no way for us to ever reconstruct this record.

All that is obvious to us right now is that bull trout are found throughout most of their previous historical range but that there are many challenges, many suppressing factors that are facing this animal. Without a consistent systematic approach, there may not be a chance for an overall recovery of the species.

I applaud both of the other presenters today--Dr. Rieman and Dr. Platts. Each took an approach that looks at the species in its entirety; and we need more of that rather than just a piece-by-piece approach.

With that, I'd like to say thank you.

Dr. Freemuth: I thought it would be nice to allow our three scientists here to at least engage each other momentarily with questions for each other's research because indeed that's the only way science proceeds. We could probably go a few minutes over, but then answer any specific questions you might have for any of the three researchers up here. So if anybody particularly wants to respond to someone else's points, I thought I'd provide a minute or two for that at the beginning.

Dr. Rieman: I'd like to make a couple of comments on both of the previous presentations. I think that a good point that came out was that we have some real problems in understanding what we've lost and that there's not a lot of good historic information.

But Fred suggested that bull trout are still present in most of the historic range. I think that is not accurate. What we know is that bull trout occur in probably 30 to 50 percent of what was available to them, and then there was a big chunk that we don't know much about. So we don't know that they occur in most of the historic range; we know that they're widely distributed.

The other point I'd make is that Dr. Platt's general conclusion, which was that we don't have a lot of declining trends, is not, I think, supported by the kind of information that he looked at. I say that because I'm familiar with some of the data sets that he used and some of the analyses that they did, and they often did not use all of the available information. It's important to look for that historic information, it's important to use what we have, but if you're going to do that, you have to use all of it. You have to make the effort to get everything that you can. Not finding it doesn't mean that it's not there.

I'm a little concerned about that because one of the systems that I worked on was Priest Lake. The conclusion that came from the work that Bill did said that there was no evidence of a decline in Priest Lake. Priest Lake collapsed, the fishery collapsed in the 1970s. It did not recover; it has not recovered. I was the regional fishery manager in that system, and I was responsible for closing the harvest of bull trout in 1984. That's well documented.

I think it's inexcusable to suggest that there's no evidence for problems in a lot of these systems. The statistics that were used in many of the analyses were not correct; the data were not complete; a lot of data were omitted. So I think we have to be very careful.

There's a good point here that we don't know; we've got some real problems with the historic record. The states have not done a good job of maintaining information bases. It's very difficult to go out there. But if we're going to do these analyses, they've got to be done right. We've got to put good information on the table, and that's what the discussion has to be based on .

Dr. Platts: I guess I had better respond. Dr. Rieman is in error on his interpretation of our Priest Lake evaluation. We just had a time period on Priest Lake, and we felt the data after that period of time was very flimsy. Our conclusion was that, just during that time period, we could not see a decline in Priest Lake. Now, whether it happened after that is something else.

We were trying to find out when the decline occurred. As Bruce Rieman says, "Fifty percent of the bull trout areas aren't occupied by bull trout anymore." Well, that could be, but show me your databank, and show me how you came to this conclusion. What we found in the historic record is that the data is not there.

Now, we do have a good chance in the historic record to go back--and we haven't done this yet--and find out what the populations really were in the '30s, the '40s, and the '50s. As I said before, I was born in Lake Plieotocene, so I was fishing bull trout in the '30s, '40s, and '50s, and I watched a lot of bull trout streams, caught a lot of bull trout, and talked to a lot of bull trout fishermen. It was surprising to learn how few bull trout there were during that period. The data seems to imply that, but we have not gone through that analysis yet.

My point is--and Bruce brought up a good point—that it should be interpreted correctly. That's the reason this whole document is out for review. It will not be finalized until it is interpreted correctly, until everybody's taken shots at it, but it's the first time that fishery biologists finally got enough sense to go back and look at the historic record. That's where the answers lie.

Mr. Goetz: I have a couple of points, too, to answer Dr. Platts

and Dr. Rieman.

In my original look at creel census for Oregon, there wasn't a lot of consistency as Dr. Platts has said. There's very little to use in a database. I used what is available just for reconstructing distribution, of where we found these fish, not necessarily for finding numbers, through time, of declines or increases.

The other thing to remember in using this trend analysis is that there's a lot of intermingling of populations in different areas. So while we may be seeing an increase or decrease over all, it's hard to tell whether that's a population from one stream or a second stream or whether this is a metapopulation or a bunch of smaller populations.

The use of different angling techniques has changed through time as well. Some anglers have found out that trolling for bull trout, using lake trout gear, is very successful in Flathead Lake and other deep lakes. So there's been a changing in technique as well as angling pressure through time. So you have to evaluate the data a little carefully to find out whether this is an increase or decrease.

A second small point. Wallowa Lake was presented as one example. There was a large increase in bull trout in the mid '70s presented in that data set. That was about the time, 1974, when they introduced Dolly Varden from Alaska. They were planted in Wallowa Lake. Previously, records from the fishery biologists indicated that bull trout may have been extirpated from the Wallowa system or Wallowa Lake, particularly in the 1940s. They were trying to reintroduce the fish from stock they collected from Alaska. That was Dolly Varden, not bull trout. So some caution is necessary with some of the examples given here.

In regard to the other comment from Dr. Rieman about distribution of bull trout and whether they are still found where we historically found them, I agree with him that we don't have the full data set to look at. I should have been more specific. For Oregon and Washington, they were found in most of the systems where they were originally found, but they were found in much more restricted range. Often they may be isolated in one or two miles of stream habitat in the entire basin, so while they may be present in the basin, they may have lost 90 percent or more of the total habitat available to them.

Dr. Freemuth: We're right at five. There's one hand that went up. We'll take one question. I'm not sure that the Governor wants to put up the next piece of the puzzle after we just heard all this, but it's his puzzle.

Paul Brouha: It's a quick comment about the nature of peer review, because peer review of scientific information goes on within the scientific community by preference. I will tell you that as a director of the American Fisheries Society, which publishes four peer review journals as well as a monthly fishery report that is also a peer review, we get a great deal of diversity in terms of comment on any given manuscript, almost without exception. We have three chapters--Montana, Idaho, and Oregon--that have all done peer reviews of Dr. Platts's work. The summary, as well as the individual views, are going to be provided to Bill. As he has stated, it is a review draft, and he will presumably incorporate these comments to the extent that he can and will interact with the peer review over time to make sure we are, in fact, provided the best information.

Dr. Freemuth: Okay. Before we close, the evening session will begin with a social hour no-host bar at six at the Red Lion Riverside. Please, when you go, you've got to wear your name tag. No name tag, no dinner, so make sure to bring that with you. It's your admission ticket for tonight's activities.

Thank you for coming. We'll see you in about an hour.

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SEARCHING FOR SOLUTIONS: SOLVING THE BULL TROUT PUZZLE

EVENING SESSION

Speaker: Dr. Mark L. Plummer

Dr. Mark L. Plummer: When I was ten years old, my family moved to Bellevue, Washington, a suburb east of Seattle. Today, Bellevue is full of shopping malls and four-lane roads, but in 1964, it still had a few touches of wilderness. Our street was a dirt road. A short distance away lay a large open field where I would watch big, snowy owls hunt for mice; and at night, I could hear the coyotes howl from the woods atop nearby Pike's Peak. One morning, we awoke to the sound of my dog howling; he had met a porcupine in the wrong direction.

My favorite place lay about fifty yards behind my house. A path took me through the woods that bordered our back yard to a stream, Kelsey Creek. To a child's eyes, the creek was a mess. Trees hugged the shore, and logs and branches were scattered through the watercourse. Those features provided me with endless opportunities for exploration and play—and with my favorite memory of my favorite place.

Traveling down the path one day, I found the creek alive with fish. (I wish I could say the fish were bull trout, but that wasn't the case.) Green, pink, and red-tinged fish—salmon! From Puget Sound, through the Ballard Locks, across Lake Washington, and up the Mercer Slough, the salmon had come to Kelsey Creek to spawn. On that day, I spotted a fish stuck mid-stream, caught in a tangle of branches. I waded into the creek, grabbed the fish by its tail, and set it free.

With a memory like that, one hardly needs to ask where I stand on the issue of saving the salmon—of course I'm in favor! Well then, we've solved our problems, we can all go home, the conference is over—we're all in favor of saving the bull trout.

But let me ask another question: How many here are in favor of malnourished children? Of unsafe automobiles? Of unhealthy workplaces? There's the rub: We're all in favor of doing many good things from saving species to providing a healthy work environment; from providing our children with adequate nourishment to ensuring that our automobiles are safe. Often these goals

do not conflict, and our choices are easy. But sometimes they do, and the choices get hard. We can pursue them all to some extent, but we can rarely satisfy each one to its fullest measure, all at the same time. How do we choose when we are forced to make tradeoffs, when we must sacrifice other worthy goals to do a better job of saving endangered species like the bull trout?

One way of choosing, we often hear, is to turn the problem over to science, which can tell us how to save endangered species. The problem, or so we imagine, is something like the following. Suppose you are walking down the street and spot a car speeding right toward you. You would hardly take the time to debate the rights of pedestrians to occupy a city street or calculate the costs and benefits of stretching your leg muscles. The danger is so immediate and so severe that a single course of action is called for: Get out of the way! Anyone who could show us the fastest route to safety would be a hero.

The images we encounter in the debate over endangered species are akin to that speeding car. Species are like cogs and wheels, Aldo Leopold tell us, and only a fool would throw them away. They are like rivets holding together an airplane (our planet), Anne and Paul Ehrlich tell us, and driving them to extinction is like popping the rivets. Species are strands in a web of life, we also hear, and losing even one threatens to unravel that web. The consequence in each case is straight-forward: ecological disaster. Anyone who can tell us how to avoid that calamity would thus be a hero, and ecologists, biologists, and other natural scientists seem well suited for the role. Turn the problem over to science, and scientists can show us the fastest route to safety.

But these images do not fit well with reality. The natural world cannot lose all of its species, but it can certainly afford to lose some—perhaps a great many. Take the bull trout—the world will not come to an end of it goes extinct. The loss would be a terrible tragedy, but human civilization would survive. Lacking the force of a catastrophe, extinction and attempts to stop it thus become a matter of choice, not necessity. We have to ask ourselves how much we value saving a species or an ecosystem—and how much we value the things we give up in order to do so.

Of course, there is one science that purports to tell us what our values are—economics. And so there is another potential way to make choices: Turn the matter over to the economists or even the market. After all, species like Bos tauris, Lycopersico esculentum, and Piper nigrum are hardly endangered. The market has provided plenty of protection for these species: the European domestic cow, the common tomato, and black pepper. Why not let other species pay their way? We often hear about the potential cancer cures provided by species of plants—why not let the pharmaceutical companies determine which plant species to save? If somebody can't make a profit from them, then they clearly aren't worth keeping around.

If you object to turning things over to the market, economists have ways of determining values for things not sold in a market. Many of you may value a species you've never seen, or one that you never will see. In that case, economists can determine the dollar amount of what we call a species' existence value. Take the whooping crane, for example. The bird attracts tourists to the Aransas National Wildlife Refuge in Texas, so it has some direct, market value. But other people who will never visit the refuge may place a value on its existence. So let's add it all up. Suppose we come up with $5 million per year, the total value of the whooping crane. Right now, the Conoco Oil Company is exploring the refuge for petroleum deposits. Suppose it finds a huge pool of oil, worth $10 million a year in profits. Then the crane should go—the costs of keeping the refuge pristine aren't worth the benefits. And if you object that the profits will go to the oil company, not society, then a check for $5,000,000, made out to the U. S. Treasury, should settle things.

The logic is compelling, if economic values are the only ones of any importance. The bull trout has such values, no doubt, but they are not the main reasons we're all here. Saving the bull trout and rehabilitating its ecosystem tap into a set of values broader than just mercantile ones. We can't put a dollar amount on the magnitude of those values, so we need more than just economics.

Where does that put us? Smack in the middle of the one arena that tackles such difficulties every day—politics. "Politics" is frequently used as a dirty word, sometimes by politicians themselves. But in a democracy, the to-and-fro of politics is how society reconciles incommensurable goals like protecting endangered species and creating houses for the middle class. Threats to biodiversity have biological, economic, social, demographic, and philosophical dimensions, but solutions to those problems do not lie just in the hands of biologists, economists, sociologists, demographers, and philosophers. Ultimately, the decision to sacrifice some economic and social efforts in the name of endangered species like the bull trout is a political one.

If such a decision is to be truly wise, the political system must have two important features. First, it must acknowledge the legitimacy of all the values in play. Saving the bull trout is an important social endeavor, but so are managing forests for wood products and altering the flow of rivers for hydroelectric power. Each activity needs to be accepted on its own grounds and not condemned or dismissed out of hand for its consequences.

Second, all parties involved in a negotiation like the one that may emerge over the bull trout must face the possibility of losing—that is, no one party should possess a trump card. Otherwise, the certainty of not losing undermines the willingness to make tradeoffs and saps the negotiations of the shared sacrifice that helps create a lasting outcome.

Does our present system have these features? Unfortunately, the Endangered Species Act fails on both counts. In 1973, the thinking of Congress was summarized in the statement of Representative Sullivan, Democrat of Missouri, the chair of the Merchant Marine and Fisheries Committee: "When we threaten endangered species, we tinker with our own future. We run risks whose magnitudes we understand dimly. And we do so, for the most part, for reasons that can be described most charitably as trivial." Losing a single species had the potential of unleashing disaster, and so the ESA had to be the trump card to save humanity; and the cost of using that trump card wouldn't be unreasonable because it would displace only "bad" people and projects.

During the two decades since, we have learned that losing a species is less than disastrous and that sometimes we threaten species for good reasons indeed. Congress has revisited the act several times, moderating it in some respects but retaining its basic ability to override human concerns. Frustration with the act has built to the point where the current Congress may drastically cut the act back, taking the trump card away for good.

As Congress debates the future of the law, I hope it considers what might be called the paradox of ESA. Would we be here, tackling the problem of the bull trout, without the ESA? Yet,

now that we are all here, the ESA threatens to scuttle the attempt. Prodded to come to the table by the ESA, we are now trying to keep the ESA out of the negotiations for fear that it will impose its own inflexible solution.

Is it possible to live with this paradox, using the law as an incentive to tackle endangered species problems but keeping it out of the final solution? Perhaps. But the law also encourages another solution, one that I saw a few years ago while on a trip to Austin, Texas, which is trying to solve its own endangered species problem. To the west of the city lies the Austin Hill Country, home to the black-capped vireo and the golden-cheeked warbler, two birds on the endangered species list. The Hill Country came under siege during the early 1980s, fueled by the savings-and-loan boom. The city of Austin and other local groups came together in the late 1980s, when the savings-and-loan bust gave them some breathing room, to put together a plan to save the birds and their habitat. The plan had been stumbling along for more than five years when I visited them in 1992 to take stock of their effort.

Driving through the Hill Country, I saw something that presaged the eventual troubles the Austin plan would encounter. Along the side of the road was a real estate sign, giving the usual information: 10 acres for sale, $1.5 million, the phone number to contact. But in big capital letters was the most important piece of information: NO BIRDS. The property did not have any black-capped vireos or golden-cheeked warblers, and the owner was going to keep it that way. By doing so, the land could sell for a premium, a premium, in other words, for the absence of any endangered species.

As long as the ESA is viewed as a trump card, it is likely to produce more NO-BIRDS solutions that get rid of endangered species and their habitat in the first place. Yet, getting rid of the law altogether is likely to produce a similar result. What we need is a balance, then, in which saving endangered species stands shoulder to shoulder with other social goals. We need to grant biodiversity a place in our political life, raising it to a level comparable to other important social goals, such as housing, defense, and education. Yet unlike the present system, it must be at the same level, no higher, which means giving up the trump card.

In such a reformed system, local and regional entities will have the power to tackle endangered species problems and to own their solutions, not have them second-guessed or overridden by the ESA. There's still a chance to have that happen here. As long as the bull trout stays off the list, the negotiations have the flexibility to reach a solution that makes sense, that tackles the tradeoffs, and comes to an equitable resolution, all without the ESA looming over you. I hope you can reach that point. Good luck.

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SEARCHING FOR SOLUTIONS: SOLVING THE BULL TROUT PUZZLE

BREAKFAST SESSION:

Speaker: Peter A. A. Berle, President/CEO National Audubon Society

Chairman Cecil D. Andrus: Ladies and gentlemen, the Andrus Center for Public Policy was created on this campus with the hope of bringing about dialogue, understanding, and perhaps resolution of those natural resource issues that confront us. They're becoming more complex, as you know, and in the bull trout conference here, I think the biggest thing that took place yesterday was that we had all sides in the same room, people who had been talking to one another via the newsprint, people who have strong feelings on both sides of the issue. We had the academicians, and we had the professional experts from industry, from Fish and Game, from the U.S. Fish and Wildlife Service, from the Forest Service, and from all of the others. It's always been my feeling that if you bring people together, you bring resolution.

Right now I want to introduce our speaker at this breakfast, a man that I've known for about 15 years, a gentleman who is currently the president and CEO of the National Audubon Society, based in New York with offices throughout America and in the nation's capitol. Peter Berle is a lawyer, but don't hold that against him. He was very, very active in the political arena as a member of the State Legislature in the state of New York, and he created his own law firm, which was recognized by peer groups in the bar as one of the finest small firms throughout America. Throughout all presidential administrations, he has served in numerous advisory capacities pertaining to the environment and the concerns of Americans for a better world. When he was in the Legislature in New York, he started out as the ranking minority member, and in the New York Legislature, that tells you pretty well which political party he belongs to. But I don't hold that against him. I'm a Democrat, but we have to be very careful about that here. There are only two or three of us left, and if they amend the Endangered Species Act, Peter, I may be in trouble.

I want to tell you that this man has demonstrated his concern for the environment in every conceivable way, but he is also a man who understands the need for the continuation of the economy and the world.

Ladies and gentlemen, we're going to be treated to a presentation from Peter Berle.

Peter A. A. Berle: Thank you, Cece. I remember meeting you when you were Secretary of Interior and were beleaguered over Alaskan issues. However tough the bull trout issue may be, it certainly is not as tough as that one was, so I'm optimistic about what you've got started here and where we're going.

I also have some apprehension about talking to people at breakfast time, and that comes from a time when, as Cece said, I served three terms in the State Legislature. In the district that I represented, which was part of the east side of Manhattan--an unlikely place to come from for someone concerned about the environment. In any event, the way one gets elected in that part of the world is to shake hands with people at bus stops. I shook 1,000 hands a day--about 500 in the morning and 500 at night, before and after work. People line up at the bus stop, you go down the line and shake hands with them, and then the bus comes and takes them away.

I will never forget shaking hands at seven o'clock one morning with a young lady who was having breakfast at the bus stop. It consisted of a peeled banana, and as I shook her hand, I got both her and her banana, which woke us both up. It was not only disconcerting for her, but for the next five people whose hands I shook as I went down the line. So speaking at breakfast can be hazardous.

One of the telling things to me yesterday was to hear Bruce Rieman and Fred Goetz--whose salaries as employees of the federal government I was proud to be paying at a time when beating up on federal officials seems to be the politically correct thing to do--to hear them recognize that good scientists are trying to come to some basic agreement on what the facts are. It is a model that I hope we can continue to follow as we deal with these issues.

I'd like to spend some time—not specifically on the bull trout since that is an area in which others have much more expertise than I—but on looking at how we solve these problems and where we're going within the context of a national debate about the Endangered Species Act, a debate that is ugly now and is only going to get uglier over the coming months. It seems to me that the first thing we have to ask ourselves is where we want to be going as a society, and I think most of us believe--and I'm sure you do and that you agree it's worth articulating once in a while—that we have to get to the point where we are living on the interest of our biological capital, not the capital itself.

What that means in other terms is that basically we have to achieve that elusive goal of sustainability. Everybody defines sustainability differently, but indeed we've got to be able to manage our resources and meet our needs in ways that do not deprive those that follow us of the same kind of capability.

We are focusing on this issue within a context that recognizes that those that have preceded us have had a terrible time achieving this goal.

Ecological collapse, which produces the collapse of a society, is not unique to this particular point in time. If you look at the Aztec ruins in New Mexico, you see a situation in which a very vibrant society had plenty of wood and abundant resources, but the archaeologists tell us that the society really collapsed when it got to the point that the wood was gone. They just didn't have enough around them to keep it going.

People who have looked at the Mayan civilization suggest that, as they became so organized and had so many people, they outran or got so far beyond the ability of their agricultural production to keep them going that they began the decline, which was really pretty far along by the time the Spaniards got here.

We're all familiar with the story of a tragedy that happens on a commons. Each person has his sheep on the commons, and there is no incentive for him to take his sheep off. Therefore there are more and more sheep until ultimately the commons can't support any of them.

So one of the questions is: What are the things that we do to deal with these issues that will take us to sustainability? I would suggest that the ESA is the safety net, but it is the last part of a chain. One of the objectives that we ought to achieve is to solve our problems so that the ESA never has to kick in.

I like to think that ESA ought to be like the shiny cannons that were in the bottom of the New York State Legislature. When I had school groups up, we took them through the Capitol, and there were the flags and the memorabilia that are displayed in just about every state capitol. We had these two really shiny Revolutionary War horse-drawn cannons, sitting down in the bottom of the building, and I loved to take the kids down there and say, "Now these are the cannons of ethics, and the reason that they are so shiny is that they are never used."

That's the place we ought to get to with respect to the ESA. The ESA ought to be the last resort because we all know that by the time a species become endangered, the time to do something about it is almost past. The options that you have are much more limited and much more expensive than they are prior to the time that the species itself is on the brink.

Despite all of that, our current national concern, as a result of some of the crazy things that are going on in Washington, is much more focused on doing something to the ESA rather than doing the things that are necessary to achieve sustainability. I'm sure all of you have been seeing in the press some of the stuff that is being proposed. Some of it is an effort to deal with what are perceived to be problems. A lot of the efforts that we're seeing are simply are attempts to throw a monkey wrench in the works so nothing can happen.

Congressman Dooley from California has a bill in the House-- and I don't think it will pass--in which he seeks to simply statutorily lift all of the listings that now exist, to charge the Fish and Wildlife Service with doing them over again under different criteria in two years, and to suspend any protections that now exist while that's taking place. In effect, it pulls the lid off, declares open season, and then puts the Service up to a task that it can't possibly accomplish.

There are other efforts going on which may be a little more realistic than that, but they don't make you believe that we are looking for positive solutions. There's an ugly stripe to it, too.

One of the striking things was that Congressman Young set up a separate task force, chaired by Congressman Pombo from California, to look at the Endangered Species Act. One of his own members—Gilchrest--invited E.O. Wilson, who is perhaps the best thinker in the country on biodiversity, to testify, but Pombo declared that Wilson would not be allowed to testify. Here is the foremost authority on biodiversity in the country, if not the world, and, for political reasons, it was decided that he shouldn't testify. The thing became such a rile that, ultimately, the Speaker himself canceled the hearings. So we are going through this tremendous political exercise, a lot of showmanship, and a lot of political retribution that simply aren't going to take us very far in terms of getting to a solution.

Within the last few days, the National Research Council, which is part of the National Academy of Science, has released the preliminary draft of its look at the science of the ESA. This was a separate scientific group that was charged with the responsibility to look at the science behind the ESA. The report was very positive. It says that the way the ESA looks at species, the way it's set up from a scientific standpoint, has merit, and it basically makes some suggestions—but not many— about minor changes. That's useful because obviously we'd like to think that where we're going is science-based and that if we can agree on the science, then some of the solutions may follow.

But I think that none of this helps us to deal with the whole issue of how we manage our resources so that by the time you get to the ESA, you don't have to get there. I suggest that what we have to do is, first, achieve a better early-warning system. We need to know the condition of our biological health before the issue is whether or not to list. We need to know that, and we need

to know it early. There I'm afraid we're moving in the wrong direction. The effort to abolish the National Biological Survey, to line that out in the budgeting process is, in my judgment, a step in the wrong direction because without better early warning, you can't take the steps you need to take in order to achieve better management.

The next thing we need to do is to have better mechanisms by which we have agreed-upon systems of management that involve public sector, private sector, large land-owners, small land-owners, diverse groups with diverse interests. But the agreements that are being talked about here, the arrangements that are worked out so that we can preclude getting to the point where the ESA kicks in are really our only hope for the future. So forums like this one are absolutely critical because they are one of the ways we avoid ending up in court or looking for ESA protections because there's nothing else left.

That may well involve--and a lot of my colleagues in the environmental community are worried about this--that may well involve providing various kinds of incentives that we don't have now for better management practices and better understandings again between public and private entities that are looking at the whole ecosystem. How we do that, how we make that work is one of the great challenges because we all know that it's a lot cheaper to provide the incentives now and to provide for better management than to get it to a point where a species is endangered and the flexibility is much shorter.

As we look at that, I suggest that some caution is worthwhile. One of the things that we're hearing a lot of in Washington at this point is that we're going to do everything on a cost-benefit basis. We're going to decide how to do it, we're going to decide what's worth doing, and we're going to make rational decisions. Although that is an appealing argument and there's a lot to be said for it, I simply want to advise some caution about the whole cost-benefit concept. It's hard to be against cost benefit: Why not do things that are worthwhile? But I think we have to recognize what a limited tool it really is, and the reason for that is that we are very good at measuring costs.

We know what it will cost to deal with certain kinds of anti-pollution devices, we know what it will cost to leave certain stands of timber in one place, but we're not very good at measuring benefit. How do you measure the benefit of a potential solution to a cancer problem a generation away? How do you measure the benefit of the pleasure that we get from catching a large bull trout? How do we measure the benefit that one has from an ecosystem that works? We don't have a system that quantifies those very well.

So all I'm suggesting is that while cost benefit is a useful tool, it cannot be the sole tool because we don't measure benefits in our pricing system in a way that works very well. As we continue to hear about putting everything on a cost-benefit basis, all we have to ask ourselves is, "Wait a minute. Does this really measure the benefits?" And if it doesn't, let's use it as a guide but recognize there are other values that need to be measured. I think perhaps one of the best ways of thinking about it is exemplified by again another political story.

Averill Harriman was one of the first millionaire candidates for governor in New York though he was eclipsed years later by Nelson Rockefeller, who, it was said, bought one party and rented the other. Averill Harriman put a lot of his own money into his campaign—in 1950 I believe it was—and the fact that he was, in effect, putting his own money in a campaign was more unusual in those days than it is today. There's a story that he was sitting with his campaign manager one day and said to him, "Have we spent a lot of money in this campaign?"

And the fellow said, "We sure have."

And then Averill said, "Well, have we wasted much?"

And the campaign manager said, "Yes, about half."

Averill paused and was a little worried about that.

Then his campaign manager added, "But I don't know which half."

That is the problem with having to reduce the endangered species analysis to a cost-benefit problem. We simply cannot always measure the costs and the benefits, and that is part of the mischief in proposals like Senator Gorton's, which says, "Let's allow the Secretaries of Interior and Commerce to make those decision on their own, based on some form of analysis that they would apply." We've got to have some pretty strong standards. Again, obviously speaking from the point of view of an environmentalist, the standards must be those that favor the protection of our biological capital because without it, everything else tends not to hold together. Where I come out is that there really is not a lot wrong with the Act itself.

The other thing that's interesting is that, although the view of the day is that this whole thing is terrible, the interest in protecting endangered species, if you look at the public at large and at some of the focus groups, is strong. The ESA was enacted over 20 years ago and has had strong bipartisan support throughout its history.

I appeared last night in a debate on public television here while you were being enlightened. I had the opportunity to throw more fog around this whole issue in a debate with a lawyer from a conservative foundation here. We sparred a little bit, and then the phone lines were opened. The interesting thing to me was that in the first round of calls, the majority were folks who were calling in to speak in favor of the ESA rather than to oppose it.

So, I would leave you with the notion that, although the Act may need some tinkering, the basic concept is a sound one. We've got to do it better, it's got to be smoother, but I think it has basic support. While we are spending all of this political energy either trying to defend it or trying to get rid of it, we're missing the boat. The real challenge is how we manage ourselves in ways so that we do not have to bring the ESA to bear, and that is going to take a lot of innovation.

Cece, maybe a future forum, after the bull trout issue is resolved, might consider the broader issue of what are the elements of management activities that have to be brought to bear, what incentives are necessary, what legal structures do we need so that one can manage ecosystems more effectively. It obviously involves urban planning and people as well as industries to get ourselves closer to sustainability than we are today.

The arguments some espouse—that things just can keep going and that we don't have to worry too much about it—are, it seems to me, refuted by some of those great pictures we saw yesterday of those great big bull trout. There aren't that many anymore. They're harder to reach, and their survival is in question. We can't dispute the fact that things are not improving or that if we continue our current course on the planet, what we will leave for those that follow us won't match the resources that we ourselves have received.

The concept of sustainability must be one that governs all our thinking, and it's not only a question of how we manage our forests. Obviously as we buy, as we vote, as we consume, if we think about what's happening in the chain of supply that produces the product that we buy, if we think of what happens once it goes out, once we get through using it, we will begin to start grappling with those issues that take us to sustainability.

We thought in the '70s that we made great progress when, even though people were groaning at the idea, we said we ought to do some impact analyses before we make decisions. With all of the problems that leap up, I suggest that we're making better decisions as they relate to the environment than we were. But if you only look at the impact of a decision right then and there, you're missing half of it. When you build a building, the question is where do those resources come from? The decisions you make when you purchase them for the building affect the whole chain of supplies, so we've got to look much more broadly.

The first key—as it relates to avoiding having to bring the ESA into focus or kicking it in or pulling the trigger through making the listing argument—is to develop the management concepts, the arrangements, and the agreements we need to keep the species going.

So we have a tremendous challenge ahead of us. It is much bigger than the current tinkering with the ESA. What you're doing here with the bull trout—to the extent that through a whole series of agreements and private interparty arrangements one can develop a mechanism by which it survives—can be a model for the rest of the country. So I wish you well in this process.

I said to Cece that I think it's misleading to think that all the pieces of the puzzle fit together neatly. This is a messy process, and the puzzle will probably never be neatly put together. But certainly the outlines can be done in ways that are far better than we've done it in the past. So the challenge before you really is not only to solve this problem in a way that works but in a way that the rest of the country can look at and say, "Ah-hah. This is one of the ways that we achieve sustainability, and we use this Endangered Species Act only when it's absolutely necessary and there's no other recourse." Our pledge is to see that we never get to the point where it is necessary.

So good luck, and, Cece, we're looking for the solutions, which I'm sure will all be wrapped up by the end of the day. Many thanks.

Chairman Andrus: Thank you very much, Peter.

Ladies and gentlemen, when I introduced Mr. Berle, I neglected to point out the tenacity in his personality. When he mentioned the Alaska Lands Bill when I was Secretary of the Department of the Interior, I was reminded that this man wanted to know a little more about the Arctic Wildlife Range, which is that last piece of the world up there in the northeastern part of the state of Alaska, a piece that hasn't been touched yet by the industrial footprint of man. He decided the only way to get to know it was to walk across it. So he put a pack on his back and away he went. That area up there is so fragile and sometimes so sterile that it takes a barren-ground grizzly bear 100 square miles to sustain itself. I don't recall how many weeks it took him to wander in and out of the wilderness, but he came back with first-hand knowledge.

Also you might wonder how I could convince a man like this, with the responsibilities he has in New York and Washington, to come to Boise, Idaho. Well, I happen to know that Peter's a pretty good hand with a fly rod, and I said, "Hey, I've got a drift boat now, and I will present you to some of the finest trout water in America at a later date when the velocity of a couple of my favorite no-tell-um streams slows down a little." So I do owe you a debt. I will not forget it, Peter, and I do appreciate your being here.

Now, the puzzle he referred to...there are several pieces to go into that puzzle today. Bruce Reichert is the gentleman who will be the moderator for our next panel in the next room. It's not scheduled to commence until nine o'clock, but if we can get out of the blocks 15 minutes early, we'll be able to move right ahead with the activities here this morning.

Yesterday was a very enlightening day. I think not only was it educational, but it was sound, well-spent time for us. Today, the third panel is on the impacts of management on the bull trout. We have what I believe are three of the most knowledgeable members of the scientific and academic communities to speak to us in that regard.

Then Panel Four will be the Case Histories for Bull Trout Conservation. Jerry Conley will head up that panel. Okay, Jerry, stand up so they see the shiny--well, we go to the same barber. For those that do not know Mr. Conley, Jerry is the Director of the Idaho Department of Fish and Game. He will be the moderator of that panel, and then I'll moderate the closing panel.

I hope we can get the rest of the pieces of that puzzle in there, Peter, and get us to where the people will at least agree that what you said is true: If we wait until the Endangered Species Act kicks in, the same thing will happen as happened to the spring and summer chinook salmon as a result of the debacle created by the National Marine Fisheries and U.S. Fish and Wildlife Service. I hope we'll have the opportunity to resolve this in advance.

Thank you very much for being here this morning.

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SEARCHING FOR SOLUTIONS: SOLVING THE BULL TROUT PUZZLE

PANEL THREE: "Resource Management Impacts on Bull Trout Populations"

Bruce Reichert: My name is Bruce Reichert, and I work on a public TV show called Outdoor Idaho, a job that allows me to travel around the state and pretend that I know an area after having been there only a few days or, in some cases, a few hours. In fact, in about a week, we'll be in bull trout country on the St. Joe River. The whole show will be on the St. Joe River, and one of our segments will be on the bull trout. So we try to make it a point to talk to the biologists, the land managers, and those in the tough positions of having to make decisions that impact species and humans.

I'd like to take this opportunity to thank you for being here and for caring. I know the last thing you thought about when you chose your profession was that you would be forced to submit yourself to a TV camera and inane questions, but it's appreciated by those of us who rely on you. And I want to thank Governor Andrus for bringing everybody together today.

To call the bull trout the Richard Nixon of freshwater fish is perhaps stretching the point a little bit, and I'm not sure who's more maligned, the fish or the ex-President. But certainly the bull trout was vilified as an ambusher, a trash fish, and a cannibal. Only recently has its reputation experienced a transformation capable of bringing Republicans and Democrats together. It took a deathbed experience in the case of the ex-President. I hope that's not the case with the bull trout.

The new respect that has come to the bull trout is due in no small measure to the havoc that this indicator species, this lover of cold, pristine waters can wreak on business and industry. As we discovered yesterday, threats to the bull trout are many and include forest practices, dams, mining, grazing, road building, water diversions, overharvesting, poaching, and private land development. It's not just human activities that affect this fish. The threats also come from other fish in the form of competition and hybridization and from nature in the form of droughts and floods.

The topic of our panel this morning is resource management impacts on bull trout populations, which means we're going to talk about what we do, what we don't do, and what we should do to turn things around. I know some of you are interested in continuing the debate that flared too briefly yesterday afternoon about the extent of the decline of the bull trout, and I will encourage you to continue that debate this morning. I have therefore asked our presenters to do something that I know is quite difficult: to limit their prepared comments to about 10 minutes each. That should allow a great deal of time for your comments and questions to them, and I've promised our presenters a few minutes at the end for a summation to see if there are things we can agree on.

Without further ado, our first presenter is Dr. Chris Frissell, a research assistant professor with joint appointments at the University of Montana's Flathead Lake Biological Station and Oregon State University's Department of Fisheries and Wildlife. Chris assures us that he is not a one-species type of guy.

Please welcome our Montana guest, someone who has made the study of aquatic ecosystems his lifelong passion, Dr. Chris Frissell.

Dr. Christopher A. Frissell: Thank you, Bruce. I shudder to think of myself as a bull trout authority. I hope I'm not.

The theme of my talk here is going to be basically uncertainty and the fact that there is only a limited distance we can go in nailing down the ifs, ands, or buts of a recovery strategy for bull trout or, for that matter, for any other species. Maybe the uncertainty applies particularly to aquatic species because of the intertwined and multiple nature of the threats that these species have experienced in their long and complicated history, not just over the past 100 or 200 years of human occupation but long before that as a result of the very challenging natural historical environment in which they've evolved.

But the main theme of talk is that we're dealing with issues and processes that are very interactive, complicated, and difficult to tease apart. If it were easy to identify the causes of bull trout declines, we would have reversed them a long time ago, and we'd have plenty of bull trout. It's not been simply that we didn't value them in the past; it's also been a matter of very difficult and knotty technical and social problems surrounding recovery and protection. Hence, my message of uncertainty.

I heard a lot of suggestion yesterday, particularly from the political side and from some of the managers, that science is going to bail us out of this one, and I guarantee you, folks, it's not. Most of the scientists in this room have spent the last three years doing planning and not doing science because the planners and the managers have previously failed in that task. So there's not a lot of science happening. There are a few graduate students out there that actually do get out in the field, but that's not going to bail us out of these thorny and knotty problems. These problems are particularly pervasive and, as we heard some of the other speakers allude to yesterday, systematic on a landscape scale with aquatic species because aquatic species don't really live in aquatic habitats. They live in watersheds, and the habitats that their immediate habitats are reflecting what's happening on that landscape as a whole.

With that, I'll go into the slides and elaborate on those discussions a little more.

Well, this is a bull trout. I thought that would be a good slide with which to start the morning. We saw a couple yesterday. I actually saw one last winter. After quite a few weeks in the water, we found a few. They're getting harder to find every year, I believe.

The presence of non-native species introductions is a very significant and probably, in some basins, perhaps the most pervasive single factor that has impacted bull trout. The data are not very clear on this. All we know is that where we have abundant populations of species, brook trout in particular, we have lost most of our bull trout populations over the last few decades.

That's basically what we know about the interactions. Well, we also know that there's a certain degree of hybridization that occurs, and it occurs very rapidly in some situations and perhaps not so rapidly in others. We can speculate, based on what we know about the ecological requirements of these two species, that there are competitive interactions and perhaps some predation interactions that may be to the detriment of bull trout.

We also can perhaps defensively argue that all of those interactions are strongly affected by the quality of the habitat in which those species are occurring. Their habitats are affected by human activities that make them warmer, make them richer in fine sediments, make the channel morphology or aquatic habitat morphology in general less stable—all of which tend to favor brook trout over bull trout.

Some of the work I've been doing in the Flathead Basin in the last couple years has looked at complexity. We have a few large rivers in this basin that are unusually undisturbed. We have some wide alluvial valleys at lower elevations that have their historical floodplain forests only slightly altered. Their historical channel complexity—and historically, before the late 1800s, probably most of our rivers in this region reflected this complexity—of lateral channels in spring brooks forming across floodplains with a lot of exchange of river water from the surface water of the river through the local groundwater aquifer in these valley bottoms remains unchanged. This is probably a typical situation at most of our lower elevation in the wide valley rivers.

We found that bull trout are taking advantage of this habitat complexity and using--as Fred mentioned yesterday also—these groundwater upwelling zones within spring brooks that occur on these relatively unaltered floodplain habitats for things like overwintering habitat. Also, they are, seasonally at least, finding refuge from interactions with brook trout by occupying habitats that are much colder than the brook trout prefer. These habitats essentially are gone on most of our riverine floodplains, which have been the sites on the Western landscape that have been most heavily and directly altered by human activities, such as agriculture, urbanization, and other residential development activities—all of which have the effect ultimately of constraining the lateral migration of channels and deforesting floodplains. The loss of those dynamics and features results in the simplification of channels, the separation of the river from its floodplain, and the loss of the groundwater-associated habitat features that allowed native species to persist, particularly when they face adverse interactions with introduced species.

But on the other hand, we've also been altering headwaters of these drainages. Some headwaters are at lower elevations and on agriculture land-use activities, and we see obvious impacts on those sites.

Many other headwater activities are associated with forest land development, and, particularly when you look at the existing populations of bull trout and at land use activities that are associated with the watersheds that affect those habitats, we find that probably the most extensive human activity on the landscape is our forestry-associated activities: logging and construction of logging roads. The road theme will recur at several points in the talk.

Those kinds of impacts generally result in things like erosion in headwater areas, and they transfer impacts down through the drainage system. So a headwater disturbance has effects all the way through the drainage. Whether we can measure those effects successfully or not may be irrelevant. They are occurring. The laws of physics dictate that a disturbance in a headwater area is going to be manifested in some way in downstream places.

So the habitats in the downstream parts of these systems are affected basically by synergy and by an overlapping of many kinds of activities and impacts, direct human activities that are occurring at high intensity in lower elevation areas and the overlapping headwater-originating impacts that are propagating through the drainage networks and through the watershed.

Downstream areas are vulnerable, then, to many kinds of disturbances. It becomes very, very difficult, perhaps impossible, to tease out what the actual causes of the various alterations or changes are. Essentially, all we can do is look at patterns on the landscape and identify correlations. When we have this array of human activities, we tend to have this kind of habitat response, and, as I mentioned, we know that it tends to favor some that are non-native species over the native species like bull trout.

This slide represents one way of looking at the situation from a basin-wide perspective. This is a graph of a movement of an impact plume down through a drainage network or through a watershed from the headwaters at the top of the graph down to the river mouth at the bottom. You may envision a large alluvial valley used by adult bull trout at the bottom or perhaps a lake that's used by lake-migrating bull trout at the bottom.

The bottom axis across from left to right is a time period over about 100 years. So we can look at, say, any drainage in the top part of this graph. Any drainage is going to have natural impacts, and those impacts are going to be to some extent propagated down through that drainage system and have some effect at some level all the way through.

The bottom graph illustrates what happens when you superimpose a bunch of management-related impacts on top of a natural disturbance regime which is ongoing. We still have fires, we still have volcanic eruptions, we have earthquakes, we have natural landslides. We haven't stopped those things from happening; we've simply added a bunch of other things like logging roads, clear-cuts, and grazing allotments on top of those natural disturbances. The result is that you can get--particularly at the downstream ends of this system—cumulative effects that perhaps far exceed any magnitude of and quality of impact that the system has seen historically.

Moreover, if you look carefully at the bottom of that graph, you may have seen that, under an increased frequency of disturbance in headwater areas, there may be a downstream scenario where there is no recovery and no window between these effects that allows the system to come to any kind of complete recovery.

There is a lot of empirical evidence that these things are important, not just for bull trout but for a range of aquatic species across the globe. In North America, we happen to have some data we can work with to illustrate this pattern. The Swan River has been held up here at this meeting on a couple of occasions and on numerous previous occasions as a stronghold for bull trout that is relatively resistant to impacts, that appears to demonstrate that we don't have anything to worry about and that bull trout can hang in there.

Well, just playing around with some of the data on the Swan, one year we happened to have red counts furnished to us from the Montana Department of Fish, Wildlife, and Parks. Tom Weaver and his colleagues have done a lot of good work. We had one year where we had very comprehensive counts from a number of different basins in the Swan, tributaries to the Swan, and we were able to look at the relationship and at what was driving the relative abundance of those bull trout spawners in different tributaries. We looked at topography, we looked at the whole range of physical and biological factors on which we had existing data, and, lo and behold, the road density of the drainage is what popped out as the best predictor of the overall spawning abun-

dance of bull trout in that system.

I might point out to illustrate biases in our long-term series databases for bull trout that the data--the time series for escapement of bull trout or spawning number of bull trout in the Swan Basin—is strongly biased to the left-hand end of that graph, so the data that Bill Platts used in his analysis were from the left-hand end of that range.

And that's typical. These systems that are more heavily disturbed tend to have higher turbidities. It becomes very difficult to see fish even if they are there. Eventually, when you can actually see something, you often find out they're not there anymore.

Well, when you take the landscape view of the superimposition of many of these interacting processes moving down through drainage networks and affecting habitats as they move, the picture that emerges, when you look at distribution of those disturbances on real landscapes, is a much different one than we've operated in the past with management of bull trout and other natural resources. But historically, most of our management theory and assumptions are based typically on a model where we have on the left here, represented by A, a relatively intact landscape and we're just disturbing little patches of it. And the arrows here indicate sources of bull trout that can come in and recolonize those habitat patches as they recover from the localized disturbance events.

So the model is that we have a pretty intact system. We have places that we've harmed heavily or where natural events have occurred that disturbed it. The fish are basically surrounding that area, and they're able to recolonize essentially as soon as habitat is suitable for that to occur.

When we look at the current distribution of viable populations of the fishes or even existing populations marginally viable and at the historical pattern of impacts on the landscape, a much more realistic model is on the right-hand part of this graph where essentially the matrix is heavily disturbed and depleted of the species we're concerned about. We actually have a landscape that consists of very isolated islands or fragments of semi-intact habitats and populations. Almost for certain, it's going to be limited more by the consistent availability of individual fish to colonize surrounding habitats from those intact patches than it is going to be by particular habitat conditions out in the black part of the graph, out in the shaded somewhere. So the farther you get away from one of those islands, those intact islands in this landscape, the less likelihood you're going to get any actual biological recovery for a given investment in habitat restoration or protection, particularly restoration.

Well, you can look at real landscapes, and you can identify where those islands are. The Oregon chapter of the American Fishery Society went through a several-years-long process that did that. It was completed a year and a half ago or so and was used in the professional society's Eastside Assessment, a document that came out last year.

I'll talk just briefly about another project that we've done in the Swan Basin. We've taken a multi-species approach to this problem, and I think that's what we need to do in the future where we have lots and lots of endangered fishes or sensitive fishes of concern. We also have a lot of other critters out there that haven't aquatic systems that we're concerned about: amphibians, plants, mollusks of various species. The list is quite long. Many of those species that are not fish have been perhaps disproportionately impacted in terms of their habitats because habitat protection has been focused on where fish occur. So this is an example of just focused restoration or a protection program that only culminates one species and can actually allocate impacts that disproportionately affect other species that are equally or perhaps even more of concern.

In the Swan Basin, we've taken a multi-species approach to doing the assessing of where critical areas are. We found there's a certain amount of common ground, but this is a list of some of the critical areas we identified. We found, for example, in looking at west low cutthroat and bull trout, that most of the areas that appear to be critical for relatively intact populations of west low cutthroat are not the areas that are critical for the remaining bull trout populations. In this basin, it's very important to accommodate both species when you're working on any kind of landscape assessment or strategy.

Once again, road density became a very significant issue. We basically identified these areas based strictly on biological information, indicating where these species were hanging in there and where they were impacted by introduced species. What we found out on the other end was that it turns out those same areas are some of the areas in the basin with the lowest road densities, roads that are correlated not just with direct physical habitat effects, but also a with range of human activities like poaching and introduction of non-native species. So roads are a good indicator of a range of human impacts.

When we look at these areas that are critical, they not only have a high percentage of roadless areas, they often have also a fairly high percentage of the remaining unlogged timber resource. So that's one of the reasons that we approach, sort of inevitably, a head-to-head conflict with the timber industry and perhaps the Forest Service when we're talking about bull trout conservation.

You can't put old trees back in the stumps and get them back within our lifetimes, but you can fix roads to some extent, so roads present on the other hand an opportunity, and that's probably where we ought to be focusing our restoration resources.

So with that, I'll quit. Thanks.

Mr. Reichert: Thank you, Dr. Chris Frissell.

Our next presenter is Don Ratliff, a fisheries biologist for Portland General Electric Company since 1971. In 1991, Don received the Oregon Fisheries Worker of the Year award from the Oregon chapter of the American Fisheries Society. Please welcome Don Ratliff, a man who has had success in returning a sustainable bull trout population to Oregon.

And let me throw a curve at you. While they're getting your slides set up, what one thing did you find most interesting about Dr. Chris Frissell's presentation?

Mr. Don Ratliff: I guess the thing that I find most interesting and actually disappointing is the state of bull trout in Idaho and Montana. When I originally started working with bull trout, I was assuming that we were in rough shape in Oregon but that Idaho and Montana had a lot of strong populations. I'm finding that's not really true.

So I guess with that, I'll start my presentation. It's just going to be a relatively short one. I'll talk a little bit about the history of my involvement with bull trout, including the status review of populations in Oregon, show a few historical photos of bull trout, and then talk a little more about impacts on bull trout and especially the effect of harvest and how that changes with different habitat conditions. So with that, let's go ahead and have a few

slides.

Originally, as many of you were able to tell, I've worked at the Pelican Round View Project in Central Oregon since 1971, a long, long time. It seems like I've been in one spot doing one thing for a long time, but really the job has changed a lot. After we did get our mitigation return numbers for steelhead and salmon in the mid-1980s, we started looking for a fish that could serve as a predator control over population of kokanee and Lake Billy chinook and provide another sport fish. We looked at brown trout, landlocked chinook, and native Dollys as we called them. It didn't take me very long after talking to Karen Pratt, who was one of the few people working on bull trout at the time, to realize that they really were bull trout. And it didn't take very long to figure out that we didn't really know much about them. They were a native species, and we had actually no data on them. They'd been there all the time but in relatively low numbers.

To orient you a little bit, Lake Billy Chinook is 100 miles from the Columbia River on the Deschutes River, just east of the Cascades. This system we're talking about is a large reservoir system, 4,000 surface acres and three large canyons: The Crooked River, the Deschutes River, and the Metolius River. It turns out that the Metolius is the prime and critical bull trout habitat.

This is a picture looking up the Metolius arm of Lake Billy Chinook. This is a photo of the Metolius itself—quite a beautiful stream, spring driven. The headwater spring is about 48 degrees. The next spring down is Spring Creek, about 44 degrees, and then the rest of the springs come in right at 40 degrees. Very, very cold, clear, abundant water.

A lot of the initial work was done with volunteers, and that's part of our success story. Many of us were involved at the lower level before the higher echelon knew what was going on. This is a volunteer from the Central Oregon Fly Fishers and a volunteer from Wizard Falls Fish Hatchery, a state employee. Initially, we did a lot of surveys to find out where bull trout were and where they weren't, and it turned out that the juvenile bull trout were in those very cold, cold pristine spring streams, the coldest ones.

This is a picture of the three age classes we found: the newly emerged fry (this is an April sample on the bottom), then a one-plus and a two-plus. But as you can see, they don't grow very fast at 40 degrees.

That other photo with the electrode shockers was Roaring Springs or Roaring Creek. This is Upper Jack Creek. As you can see, these aren't runoff streams. The water flows out of the ground, and they never have a high water event. Because of that, any siltation or disturbance lasts a long, long time.

A little bit about the review. After a few years of working on bull trout there, we held the Gearhart Mountain Bull Trout Workshop in Southern Oregon, and I was approached by several members of AFS to help get together information on bull trout populations in Oregon because there wasn't a comprehensive survey. We identified a number of "suppressing factors," as we termed them. One, of course, was upstream barriers. I didn't realize at the time and I don't think anybody realized the extent of interbasin migrations and the effect of barriers on the survival of these adfluvial and fluvial adults.

Of course downstream loss is another factor. Where we had anadromous fish, we had a lot of unscreened diversions. Nobody thought much about it, but we were putting bull trout out in fields.

Of course, classic habitat degradation: This was a scour during the 1964 flood, which was then straightened with a Cat, resulting in total loss to riparian vegetation.

Here is another and more subtle problem: This is a bull trout stream. They actually did leave a buffer, but it was too short, the ground was too soft, and it all blew down. Two things happen: More sun reaches the water, and water warms up a little bit. It doesn't take very much temperature change to impact bull trout. Then the other factor is that, with all the disturbance from the blow down, we had a lot of silt under these streams that, as I said, never had a flushing flow.

Then the one factor you've been hearing about repeatedly is the impact of brook trout on bull trout. We do have brook trout in the Metolius Basin, but a lot of our streams are so cold that they haven't invaded them. But in our review of populations in Oregon, that was a factor that came up repeatedly as a real detriment to bull trout populations.

One factor that the Oregon Department of Fish and Wildlife isn't too proud about and one that hasn't been brought up before in this conference is the chemical treatment projects in the '50s and early '60s in Oregon, which nixed several bull trout populations. This happens to be a coastal lake, but this was the magnitude of some of the projects that Oregon did, and they essentially poisoned whole systems

Then the one that I was going to highlight is the effect of overharvest or harvest and poaching on bull trout. For many, many, many years, the limit in Oregon trout was not differentiated between bull trout and the other species. For a long time, it was 25. I think it went to 10 in the '50s and then to five in the '80s, but until the last few years, we didn't differentially harvest bull trout from the other species, and bull trout moved down in these systems to where they're very vulnerable, and so in many places we severely overharvested bull trout.

A few historical photos of the situation the way it used to be. I think this was when the limit was 100. This is Redmond, Oregon, a fish fry situation. You can see the center fish in there are bull trout.

There were fish from the Deschutes around the turn of the century.

This was Pringle Falls in 1909. It's on the Upper Deschutes. And you can see they were getting there with wagons. There was an historical Native American fishery there and then the pioneer fishery, and they would actually salt the fish in barrels for winter food.

This is Benham Falls the next year, which is about 10 miles downstream. As you can see, it was a major fishery during that era. And bull trout are extinct now from the Upper Deschutes.

These are photos from Odell Lake, 1912, the same time period. Bull trout are essentially extinct now in Odell Lake. There are a very few left. I think they have seen three or four fish a year now.

Then we jump a half a generation although it's easy to lump all that period together. This was 1948, the year I was born. These were two fish caught out of Jefferson Creek, one of our spawning streams on the Metolius. I know this fellow quite well—he was 12 or 13 at the time—and he rode his horse about 40 miles to fish for big bull trout.

But about that same era--it was after the early pioneer era during the time we became mechanized and started developing land--we started controlling predators. This is a salmon weir on

the Upper Metolius that the Oregon Fish Commission had. This was run from '48 through the '50s, I think, and all bull trout caught here were knocked in the head.

Just before that and during part of this time, they also had traps on three of the streams and actually killed the fish. So, it went from that to a limit of 10, and for a period of time, bull trout weren't even included in the limit. And of course they were severely overharvested.

Since we figured out what was going on, we've tried to change that with a very large public awareness campaign. These signs are everywhere. Our present limit now in Billy Chinook is just one fish per day. That limit, the education campaign, and people's willingness to release the fish that are not trophies have allowed the population to rebound.

We have a fishing derby that went from a catch-and-kill derby to a catch-and-photograph-and-release derby. And they won't accept dead fish anymore. The officials give out yardsticks to lay beside the fish, and then you're on your honor not to use a smaller yard stick.

We have quite a few happy anglers harvesting fewer fish than they did before, but they are still not numerous enough to affect the kokanee population. We get tremendous growth on the cospawners through the winter and apparently high survival.

We've been monitoring population with traps on spawning tributaries. I say "we" all the time, but it's not Portland General Electric as much as a basin working group on bull trout. This is Mike Riley with the U.S. Forest Service, who has done a tremendous amount of work. Also active is the Oregon Department of Fish and Wildlife and, in recent years, the Bureau of Land Management. So it's a low-level interagency cooperative effort with a lot of challenge cost shares and a lot of volunteer labor. Fly fishers helped build us these traps. That was on Jack Creek; this is on Jefferson Creek.

We've been monitoring trap counts and also red counts. These are two spawning adults on a typical red in Roaring Creek. We were lucky enough to start documenting red numbers in 1986, and last year I think it was 320 or 330, and we're hoping to increase again this year.

So we have had a success story, but I want to qualify that because we were extremely lucky in that these streams are where the bull trout spawn and mature. They were so cold that even though our numbers were very, very low, the habitat was unoccupied. So we had very high survival of fry and fingerlings, and we didn't have those habitats filled up with brook trout. Just a few degrees make the difference.

The one place it appears we have lost bull trout is Abbott Creek. It was originally called Eagle Creek and did have bull trout spawning in it at the turn of the century. Now it's full of brook trout.

The other area in the system that did have bull trout was Subtle Lake and Lake Creek. Above Subtle Lake, just off the picture, is Blue Lake, and it's a clear, very cold, spring-fed lake. Apparently bull trout spawned at the outflow, reared their juvenile phase in Blue Lake, and then moved clear down through the system and all the way back through. But as a result of the traps, several other barriers, and the introduction of brook trout, we lost bull trout out of Subtle Lake, too. We are hoping that now, with our increased numbers, we can recolonize those two places, but we're not sure whether that will happen.

I want to talk a little bit about Bruce's work on metapopulations. Although this population has recovered, there are two other Lower Deschutes populations where we don't have very good data, and there are brook trout in those systems. The dams where I work have essentially isolated the Metolius populations from those other populations. So one thing that my company has to address in the future is how to get some bull trout interchanged in between those populations.

And that's all the slides.

So I want to say that harvest can be a major, major factor. It depends upon the situation, the quality and accessibility of the habitat, and the competition of other species. We have another population in Oregon that went away and we don't really know why. The Clackamas River, the North Santiam River, part of the Middle Fork of the Willamette, Eagle Creek—these are places that were bull trout in the '50s and '60s, but they're gone now. I think harvest was a major factor in those areas near the metropolitan centers.

With that, I'll sit down and answer questions.

Mr. Reichert: Thank you, Don.

Our final presenter will be a little different; I don't think he's planning to use slides. Dale McGreer is president of the Western Watershed Analysts, a consulting firm that provides advice to land and stream managers throughout the West. I think he'll be bringing us some practical comments that may lead us into the question and answer period.

Please welcome Dale McGreer, who brings to the panel a belief that effective solutions require a relationship of trust among the state agencies, the federal agencies, and the public.

Dale J. McGreer: Thanks for the introduction. It's a pleasure to be here. Last night--in jest of course--I said that I really had two regrets for today. First was that I had to give a presentation and the second one was that I hadn't written it yet. The way I was going to get out of that was to lose my name tag because everybody knows you don't get anywhere around here without a name tag. But that didn't work.

The final thing I did was try to get Governor Andrus to promise me that he wouldn't take a piece of the puzzle out of there when I got done.

Chairman Andrus: Haven't put it in yet either.

Mr. McGreer: So with that, let's get on with it here.

I'd like to start out with just a statement that there really should be no question that resource management practices applied historically have adversely affected bull trout populations. Certainly in some places—some bigger than others—there have been impacts and probably exterminations.

The second thing is that there really shouldn't be any question that in order to solve the bull trout puzzle, we have to recognize the nature of historical effects and the practices that caused them. Furthermore, solving the bull trout puzzle requires that, in addition to recognizing restoration needs, we control and manage effects from current and future resource management activities.

All of that's obvious in some ways, but it's just to give you a bit of background. The fact of the matter is we're supposed to be here searching for solutions. I'll just say that if we don't accurately identify the problem in the first place, it's unlikely that we can develop effective solutions. If you don't understand the problem, you're not going to solve it.

I personally am a very unapologetic advocate of the watershed approach for determining cause-and-effect relationships--that is, for identifying problems--within watersheds. It's an approach that allows us to control effects through development of site-specific prescriptions. And that's the approach that we advocated in a document that I helped develop called "Fish 2000," which was an alternative for the development of anadromous fish, one that I believe applies equally well to native fish, so I'll just toss that out as an advertisement.

With the exception of fisheries, management practices—which include some of the things that were gone over just recently here, like angling and introduction of exotics and wanton killing of fish, stream habitat and the biologic processes dependent on that habitat—are controlled by physical processes. Those processes are the ones that are addressed through watershed analysis.

Let's talk about that just for a moment. One of the most powerful things that watershed analysis does is it really gets at the cause and effect mechanisms that explain why stream systems, habitat, and stream morphology look and perform the way they do. For instance, we've seen some relationships between road density and bull trout populations. There is an inferred cause/effect mechanism when you first look at that. Do roads directly kill bull trout? No, that's not the cause/effect mechanism. How do roads create an impact on bull trout habitat? If they don't, there is no linkage. Well, they can, and they often have. Sediment's an obvious one. You can impact fish habitat from roads by introduction of sediment. Do roads necessarily introduce sediment to streams? No, it depends on circumstances, on what you all do as managers.

Another way that roads might have an impact on populations is by increasing access to little kids dragging treble hooks and worms, fishermen who don't discriminate among bull trout and brown trout and brook trout. So I think we have to be very careful, in an analytic sense, that we're getting at the true causes and effects, no matter what they are. Then we need to get after them and manage them.

There are really four primary land uses that are of concern or at least that I'll mention, some of which I'll mention very briefly. Farming, mining, grazing, and logging are the ones I've been most worried about through the years. The fact of the matter is that if any of those activities occurs within a bull trout watershed, there is potential for adverse impact. Now, however, actual impacts materialize only through effects on the processes that put materials and energy into streams.

Here's a short list of what those processes are. There's thermal input; there is large woody debris; there are nutrients and toxics, at least in some circumstances; water, in fact, is a geomorphic input obviously; and sediment is as well. Well, how does land management affect each one of those? Well, I'm not going to spend a lot of time here, but the thermal input is a water temperature concern. It's produced almost entirely through removal of riparian shade and ground cover. It doesn't matter which land use we're talking about—farming, ranching, grazing, mining, or logging--the mechanism is identical. If you remove shade, you potentially increase temperature.

Large woody debris is supplied by stream-adjacent vegetation, primarily trees, of course. Again, whatever land use we're talking about, the mechanism remains the same. I can go on about nutrients, toxics, water, and sediment, but I don't need to during this presentation.

What we do in watershed analysis is to examine how land uses affect each of those processes, and here I circle back to an historical perspective. I'm going to wind this up here in just a second.

Let's take a look at mining. Mining practices at the turn of the century and beyond included dredging, excavation of entire river valleys, bottoms, and streams, and hydraulic mining activity. We know of acid drainage and problems associated with overburden and waste disposal practices. That all happened. The question is, does it happen today or to what degree does it occur today? I'm not a mine expert, so I won't answer that question, but I think that is the question. If it occurs, then that's probably the control point.

Look at grazing. Turn of the century practices, and I'm not just talking about Idaho or Montana or Oregon. I find this virtually everywhere I go, and that's true for most of these things. We have documented accounts of watersheds that had tens of thousands of animals grazing away and clearly destroying a number of things, including streams. Does that happen today? I doubt it. Are there grazing impacts today? Yes. And the focus is, of course, on riparian management.

Logging is what I know most about, so I'd like to share some history with you on the way I see logging having developed over the last 100 years. Early logging methods were water-oriented. Puget Sound, rivers, lake systems were the first places logged. The reason that occurred is simply a matter of transportation systems. That theme recurs all through my recount of logging history.

All the early practices as they evolved were downhill oriented with one exception that I'll get to. So what we had was flumes and chutes and splash dams and horse logging. Well, horse logging is a big deal; people really think that horse logging is a nice thing. Well, it wasn't because they dragged them down greased chutes and flumes to bigger flumes and splash dams. And some of the old trails remain visible today. You can pick them up on some of the old photos from the 1933's and 1934's.

Well, also about the same time or moving right along into it was railroad logging. Railroad logging happened two ways. Principally, it again was a downhill system. With horses and other systems, you brought logs down to the railroad, and guess where you built the railroad? Before the advent of good, heavy construction machinery, the easiest place to build a railroad was in and out and over and through streams. There are lots of remnants out there in the woods today, and in fact thousands, if not tens of thousands of miles of streams were treated that way.

Well, following railroad logging we invented and perfected bulldozers and trucks. What I'm really trying to do is not to defend those events or to deny that they occurred. They did occur. What's important is to get to the future here, to talk about today's practices and the fact that they are substantially different, and to address the management of watersheds in a current and future context.

Let's talk just a little bit further about the evolution of today's practices in relation to research and to societal demands, and that's where I'll wrap this up.

The history is not long. One of the reports that I'll never forget was done by a fellow back in the mid-'50s, I believe. It was one of the earliest ones related to erosion and sedimentation. He went in and monitored loggers' choice skid trails versus

controlled and designed skid trails. What he found was sediment loads in the form of turbidity, Jackson Turbidity Units, of 56,000 turbidity units peak. He contrasted that with, for those days, well-designed systems where I think he got a couple dozen JTUs—on the order of a 10,000-fold difference because of just the quality of the practice.

Move right along to 1972, to the Alsea Research that was done in coastal Oregon in the Alsea watershed. They made the brilliant discovery that if you clear-cut and burn entire watersheds, water temperature goes up and that the buffer strips would be a means to control that. Wow. But that was 1972, not that long ago: 20-some years.

The first set of forest practices rules was put into place in Oregon in 1972, 23 years ago. Idaho, believe it or not, was second along the line in 1974, and Washington followed in 1975. These are forest practices acts that essentially are 20 years old. Before that, there were no stream-oriented rules and regulations that amounted to anything. Well, again, 20 years.

I guess in conclusion, I could hypothesize, if you will, that declining population trends caused by past practices may no longer be occurring and, in fact, are reversible as the habitat improves.

Finally, I'd add that effective solutions require analysis within individual watersheds and development of site-specific prescriptions. One-size-fits-all won't get it; averages that apply generally everywhere will be wrong anywhere specifically.

So, I hope I've hurt some feelings here so we can get some decent questions.

Mr. Reichert: Thank you, gentlemen. We're in pretty good shape. We've got about half an hour for discussion, which is what we wanted. I believe Fred Goetz and William Platts and Bruce Rieman are in the room here. If you have any questions that you would like directed at them, I hope they will want to come up to the mike. So we'll have our three panelists here put their mikes on.

We'll start with questions. Yes.

Audience: (Inaudible question)

Dr. Frissell: There is some correlation, obviously, with road density and basin size. It's more closely correlated with elevation than road density, but we had plenty of high elevation watersheds that were hosed, essentially. Those were mostly biologically hosed through introduction of non-native species. The data that drove the biodiversity assessment was only biological data on the status of existing native species and data on the introduction of non-native species.

The other correlation in terms of these bull trout spawner densities in the Swan is not affected by drainage area. As far as we could tell in our correlations, the only correlation that came up in the data that we've looked at so far has been road-density, and that's been surprising. It's also not correlated with topography. We expected that we'd have higher road densities in lower elevation areas, basins that had more low relief terrain—that's the typical pattern in this particular set of basins—but it didn't turn out that way, which was fortuitous for this analysis.

Audience: (Question inaudible)

Dr. Frissel: Well, the process is basically data-limited, and we actually had very little data for any amphibian species. We had much more data for bull trout than any amphibian species. So basically, in order to say anything about amphibians at all, you want it based on the fact that they have some common biological characteristics that make them sensitive to certain threats. Those threats that impact amphibians, as far as what's well documented, are predominantly fishing reductions. They're all basically sensitive to introduced fish because there's a high level of predation of fishes on that pond.

Mr. Reichert: That answer your question?

Audience: (Question inaudible.)

Mr. McGreer: Well, I'll take a shot at that. Again, the mere presence of a road doesn't kill bull trout, okay. There are things like increased angling pressure or excessive sediment or migration barriers through culverts—as you've well pointed out yesterday--that, in fact, are the problems, and we have to understand what those are and deal with those. If we don't, it doesn't matter whether you build one road or 100 miles of road.

How you do that really is the salient question. I can guarantee you that I can cause more impact with one mile of road than 100 miles of road in the same watershed.

Don Ratliff: My input is that it's been my experience that passage through culverts or other obstructions is a several-faceted item. It's pretty easy to see passage barriers to adults although they're extremely good at getting up the stream. What I've found is that juveniles distribute themselves in the watershed and that that barrier may be more important if it prevents juvenile bull trout from either moving up further in the system or moving between small streams. They do spend a year or two or three, and a lot of times they're foraging on small sculpins or going from a high-density area to a lower-density area. If you prevent that, you might have more impact.

Dr. Frissell: I guess my response to that question would be there is a list of problems that can crop up with roads. They don't always crop up, but they can crop up. We could talk about them for two weeks in this room. One of the issues that I'm referring to when I talk about uncertainty is that we can't predict exactly with existing knowledge; we don't know what the criteria are for juvenile passage, let alone adult passage of bull trout through road culverts. We don't know exactly what the conditions are at all the existing road culverts, let alone all the proposed road crossings that are possibly going to go in during the next decade. So there is a lot of uncertainty with this issue that we can't deal with in any cookbook fashion with Best Management Practices (BMP) or any other cookbook. There is just a certain amount of risk that's going to come with maintaining existing road networks or building new ones.

Paul Brouha: To follow up on that, Chris, let's say I'm a manager and I'm looking at how to manage tomorrow, how to make difficult decisions. I can tell you we've got an awful lot of performance data on fish passage for salmonide, anadromous as well as resident. That tremendous amount of information exists out there. When we're deciding how to approach replacement of culverts in natural stream bed systems, why is it we can't depend

upon that basis of information before we say we don't know anything?

Dr. Frissell: Well, I didn't say we don't know anything.
Paul Brouha: You implied.

Dr. Frissell: Okay, I didn't mean to. I meant to imply that we don't know enough to anticipate what all the problems are going to be with any construction of a road network. I think you can point to many failures of new roads as well as old roads in that regard, but basically you're talking about a risky proposition. And I'm sorry, but I've seen a lot of supposed road crossings that were up to specs that didn't work. They didn't pass fish, and I don't know why. It's not my area of expertise. I've got some misgivings about some of the rules of thumb that we've been working with.

Mr. Reichert: Let's stay on this question of roads if anyone has another question on roads.

Chip Corsi: Maybe all of the panelists could speak to the road issue and to the questions of where we are right now in dollars available and of how that plays off of dollars that might be available for road construction. Is it fixing the old systems first before we get into the new road systems? Or is it spending the money to get new road systems that have less impact on the watershed.

Dale McGreer: Well, that's a tough question to answer, but the way I'd approach that in a real watershed context is to identify—not speculate, but identify—where these problems really are occurring. Are there sediment sources coming from existing roads? Often they are, by the way. And we would go find those specific places in the landscape that are, in fact, a problem and we would deal with them. So I don't know that it's an either/or choice.

A manager may, for other societal objectives, want to build additional roads in the watershed. Personally, I would encourage him to fix his existing roads and design that new road carefully. Is that a risk-free environment? Of course not, but I don't know anybody that manages anything in a risk-free environment. If you can think of something, let me know.

Don Ratliff: I guess I'd just say that I think that watershed is the key in the situation with your fish populations. If you've got a risky population that needs to be reversed in the habitats and degradation, then you need to look closely at sediment sources. The Forest Service has done a lot of watershed projects, putting old roads to bed to reduce the impacts of sediment on bull trout.

Mr. Reichert: Chris, do you want to weigh in on it?

Dr. Frissell: I think the answer is completely contingent on the particular case. Does your basin have a history of a lot of old roads that are problems? Actually, the more severe problems may be in roads that are just 10 years old that haven't yet experienced a large flood event in some cases. There are ways out there of prioritizing and answering those questions, and there are cases I've seen where you might be better off building 10 miles of new road and putting 200 miles of old road to bed. You can accomplish the same transportation objectives in the next 20 to 30 years, and that would be probably the trade-off in most cases or some cases.

Fred Goetz: Something that hasn't been mentioned as much is that the trout I showed you in the slides yesterday are dentic-oriented. If they don't have large wood available to them, they hide under rocks. What happens is that you get sedimentation that fills in these gravels and rocks and affects not only life history spawning but also habitat. So we're attacking a major life-history phase of bull trout in sedimentation. There may be overlying causes or effects of sedimentation that go beyond what you normally expect with other salmonnas. So we may have to have a higher level of protection for bull trout in the systems than for large salmonnas.

Mr. Reichert: Thank you. Yes, Trace.

Trace Trent: Bruce, I'll direct this question to any of the panel members from today or yesterday. What are some of the strategies that might be employed to deal with the competition problem with brook trout?

Mr. Reichert: Good question.

Mr. Ratliff: I'll take that. First, you need to keep temperatures just as cold as possible. If you have a system that's already marginally warm, you can be in real trouble.

I think a barrier system that might allow a large fluvial bull trout but not the average brook trout to jump it would have merit.

In Crater Lake National Park and also in Long Creek in the Highland Basin, they have actually had brook trout removal projects that are quite expensive and difficult but can be effective, at least to prolong a small population of bull trout that seemed important. I think you need to look at the genetic metapopulation situation to see if you have some threatened population segments that you really don't want to lose to brook trout invasion. In those situations, you may want to have a project of night snorkeling, individual removal of fish, shocking removal of fish, or removal in conjunction with barrier construction.

Dr. Frissel: I can throw in something. There's a report now available from the Montana Scientific Group for the bull trout restoration effort. It's a fairly comprehensive review of existing technologies for removal of non-native fish species in bull trout situations, and it includes an assessment of the likelihood of success or the likely applicability of those techniques. Generally, it's pretty limited. For a species like brook trout and the kinds of habitats that they proliferate in, it's very, very difficult to remove them on any significant scale. The predominant application of the removal technology that we identified as a high priority is where a new introduction of brook trout may occur in a system that otherwise didn't have them and where they're still very locally distributed. We identified it early on, and there may be some opportunity to prevent them from spreading. But where they've already spread and established themselves widely, it's virtually impossible to eliminate them in almost all cases. Then you're right back to what Don said: You have to maintain habitat and keep that water temperature as cold as it naturally can be.

Mr. Reichert: Bruce, do you want to add anything?

Dr. Rieman: Just to heckle, I would add that the tools for removing them or preventing their expansion are very limited. What we're really talking about is trying to minimize the changes in the environment that will favor brook trout over bull trout.

Mr. Reichert: Let's try over here. Yes.

Audience: Question for Dale on watershed analysis. We often hear from managers that larger analysis is too costly, too time consuming. How are we proceeding with those obstacles?

For the second point, a lot of times a new solution that's been offered is held up until you can do watershed analysis. We just apply some uniform standard protocol for that watershed until you get to your watershed analysis; and those are somewhat restricted to minimize risk. How is that as an option to watershed analysis?

Mr. McGreer: Well, again, those are not easy questions to answer, but those are questions that people like me and the folks that I work with have been thinking a lot about over the last few years, especially over the last year.

There were a number of questions there, but one of the ones is that watershed analysis takes a lot of time and is necessarily very expensive. Actually, it isn't necessarily terribly expensive to identify cause-and-effect relationships within watersheds.

Another thing I might say in response to your question is that we've seen a certain amount of stumbling around, especially among the federal agencies lately, as to what in the world is watershed analysis. One of the principal reasons they floundered for a while is that they did not have clearly-defined objectives and reasons for doing watershed analysis. Can you believe that? It's true. The folks that were doing these analyses were asking, why are we doing them? Well, shoot, if you don't understand why you're doing something, you probably won't do it very well. And not being critical, but that is a problem that was occurring.

There are other well-defined approaches like Washington's where the objectives are very clear. You must answer--and Jeff Light will go into this I'm sure--certain key questions, or you haven't done your job. They apply specific techniques to get to those answers, and of course they allow you to go on and use additional and creative approaches to help answer these key questions.

The third thing we were advocating within Fish 2000 is a hierarchical approach in defining what is influencing the important processes that affect streams so that, in some circumstances, in order to go forward with a project or the next project, it wouldn't necessarily be required to do a full-blown watershed analysis.

What we would advocate is that you understand the riparian system, understand how the riparian areas lay out, and decide what sort of objectives might be appropriate for those areas. Then go forward and do very site-specific analysis to determine what sort of effects the project might have on those processes. And finally, develop prescriptions that would eliminate those influences. Okay, you actually could do that in most circumstances, I think, without necessarily having done a full watershed analysis.

There are times when you really do need to understand how additional harvesting might affect the hydrologic budget in peak flows, in relation to sediment, and in relation to how those processes express themselves in channels. Under those circumstances, I'd suggest that you go do a watershed analysis.

I can't answer that those questions probably as coherently and rapidly as I might like, but, again, a hierarchical approach to understanding the circumstances of the particular activity that you have in mind will often suffice.

Dr. Frissel: I'd like to respond to that. I basically agree that watershed analysis can be really lousy if it's not focused on some sort of specific management questions or objectives. On the other hand, I don't think that we should create the impression that watershed analysis is going to resolve the major questions that we are facing. It basically may help us go in that direction, but we're still going to be faced with the same basic uncertainties, the same basic lack of information and data, and incomplete understanding of certain mechanisms that we've covered in this discussion here.

Don't hang your hats on watershed analysis to bail you out of the basic problem with bull trout conservation. It may help in some cases, it may help us get a little farther down the line, but it's not going to resolve the basic questions.

Mr. Reichert: Steve.

Steve Mealey: If we move away from just brain power, if we move beyond a species-by-species provision from standards and guidelines and strategies, what are the key principles you think we ought to consider?

Mr. McGreer: Well, I'd approach it consistently with everything else I've said today: If you manage the physical processes that affect that stream habitat, it doesn't matter whether you're trying to help the bull trout or just trying to take care of the stream environment in general, you take the same approach. Granted, if there are bull trout there that may be more sensitive to one of those processes like temperature or sediment, you manage it differently in terms of the prescriptions that you develop, but the analysis isn't any different. The approach remains the same: Control those processes that affect that habitat so that you produce the environment that you have in mind.

Don Ratliff: I guess I'd like to add that we need to determine, for each ecosystem or landscape, the basic function that you want to maintain and the factors that it's going to take to do that. It's going to be different for each landscape and it's going to be very difficult. But you'll have to set a standard below which you can't let it fall. That standard has to be publicized to the general public very early. You need to let them know what that standard is and why. I think that if people realize that it's their own livelihood or home that they're talking about—not forest out there but the way the world's going to look in another 100 years—they might accept it.

Dr. Frissel: I don't have any cookbook to offer, just a few principles. One is that we need to acknowledge that natural processes will continue. Natural or semi-natural disturbances are going to be occurring on that landscape that are out of our control. We need to make sure that our management accommodates those disturbances and that the species we're concerned about have the

biological resources to cope with that regime on top of whatever we add to the system. Through history, we can learn that what we manage well is not those natural processes or those ongoing often very large-scale processes. What we manage is human activities on the landscape, and, as Don said, a lot of that boils down to self-regulation by human beings. So there's a very important process of local involvement and education in getting that kind of management to happen right. So I concur with that.

But I think we need to avoid creating the appearance that we can manage ecosystems by managing their physical and biological components and assuming that then we'll get the right products out of those. I think that kind of thinking is what got us to where we are today.

Mr. Reichert: Were you happy with the answer? Okay.

Dr. Rieman: Just maybe a little follow-up to that. I guess it ought to be clear to a lot of people that there is a lot of uncertainty and ambiguity in science. What managers and biologists are continually forced to do is try to play this game of environmental brinksmanship. How far can we push the system? Where is the threshold? Where is the edge beyond which we can't go? And we don't know where that is. There's a great deal of uncertainty. Some places are better than others, but we have to recognize that and we have to give ourselves some push. We have to have some places where we're willing to put the risks on one side rather than the other. We haven't done a very good job of that. We keep pushing for this ecological solution, which we just don't have.

Mr. McGreer: Let me add something to that. I'm really fascinated with the question of risk and uncertainty in a watershed context right now. I don't think we have all the answers, but I'd offer this: If, for instance, we were concerned about water temperature in a stream, and we argued about whether a buffer strip needed to be 75 feet wide versus 85 feet wide in order to provide 100 percent of natural shade. Undoubtedly there's some uncertainty. What happens if, in fact, it needs to be 85 feet wide rather than 75 feet wide? Well, actually we can apply some science to know what that is. We would get some percentage increase in solar radiation, and I'm assuming some increment in water temperature.

How does that translate into risk to the population? That's probably a hard question to answer, but I think we have to look at risk and uncertainty in the context of consequences. All right? If we're not right here or we're wrong in some fashion, what happens? It's a what-if game. Does the population really fall off the edge because of the kind of mistake we're making--that can happen--or can we reasonably judge that it may not make much difference if we're in error.

Dr. Frissel: My only addition to that is that I don't think we need to create the impression that we have never tried to reasonably judge that in the past as managers. That's nothing new. We've always tried to reasonably judge that, and the fact is we've been generally wrong. Species like bull trout are telling us that. How do you deal with groundwater effects on water temperatures? What are the effects potentially of change in vegetation on that groundwater component? We don't know; we don't have any models to deal with that. How do you deal with air temperature effects on water temperatures that may be propagating from outside the riparian area into the streams? So that's a whole package just dealing with water temperature, a whole package of examples of ways that we don't have of really dealing very effectively with that issue. We can minimize change perhaps with a buffer strip—maybe not even minimize change but reduce it. But we don't know what the answer is to prevent any kind of adverse change from happening.

Dale McGreer: Chris and I probably disagree a little bit, and it's a matter of philosophy. I think we know more than that. I think, in fact, we can pose these questions, and, in fact, I'll throw out another one here.

Washington watershed analysis forces you to do that. Those questions are posed, and then, as a team, you begin to examine the question and bring evidence to the table that tends to support or to refute or to tell you more or less what we have going on here. Some questions cannot be answered well; some can be answered well and dealt with or dismissed. But if we simply start throwing out all the questions and all the uncertainties and leave it there, I think it's hopeless.

Dr. Frissel: I'm not advocating leaving it there, but I am advocating being realistic about what we can expect to have certainty about. I also think that the attitude that managers never did this before is insulting to managers that are in this room. Managers have done their damn best, but their damn best wasn't good enough. The limitations of science have a lot to do with that.

Audience: As a land manager, I totally disagree with the deal that we don't know a lot. I know that if you tell me that what you want is a fisheries biologist to protect the bull trout or protect this or protect that, I can provide that, but you've got to tell me what you want and you haven't done that yet.

Dr. Frissel: I can tell you what I want, but you're not going to like it. If you really want large numbers of bull trout and you want them as far around as you can get them, I can tell you possibly the best environment that we've had that's produced that situation, but there's not going to be much role for you in that world.

Audience: There might not be for any of us.

Dr. Frissel: Probably that's correct, yes.

Karen Pratt: I would suggest that the juvenile is the tool. I would suggest that we have quite a little bit of knowledge and that we've done some valuable work on what the problem is. A lot of our knowledge is nonpliable ground. There are 1990s examples of very poor road construction, substandard culvert sizes. In places where roads have already washed out, we have mass wasting happening. Mass wasting means just that: Hillsides falling from old road prisms into creeks, creating those dry, soft water channels. Those things are not up. Those things are not being addressed in Fish 2000. They're not being addressed here. So we have tools, but we don't apply them. Why is that? The gentleman this morning said we need to do something before we get to the ESA.

Well I think the former statement is well applied. It's about viability. People don't want to go back and look at old risks. They

will in certain places, but there are lots of examples of things that need to be done. There's not money. Chip asked a question earlier, and it was a good one but just kind of got passed over. Where are the moneys? Why is it so hard to get the money?

Dale McGreer: I will not defend poor practices. What I'd suggest is any management strategy that tells you one thing and does another is going to result in poor management.

Karen Pratt: So how is the public going to take care? How is the public going to have any kind of assurance? Why has the trust level gone so far down? I would say the trust level from the public has gone down because the actions on the ground have not reflected the signs that we already have.

I would like to understand how the Andrus Policy Center puzzle is going to go in there to give us some way to put the knowledge that we have on the ground. Why can't it go on the ground?

Fred Goetz: Getting back to the question of bull trout, ecology watershed assessment, char have been used as an indicator of Northern temperate aquatic ecosystems around the world. They're considered to be one of our most sensitive species, and they have very specific habitats. If we use bull trout as an indicator, I don't think you could choose a batter species. They have the coldest water temperatures, so if we set the standard for water quality and water temperature and use bull trout as an indicator for sedimentation, all their life history stages may be dependent on maintaining habitat complexity. We need to have a diversity of habitat types. That means we may need wider buffer strips, it may mean getting more wood, it may mean looking at things like light intensity along with water temperature. Light intensity may be very important for bull trout. I agree with Karen that the science is there, but it's not being translated on the ground.

Mr. Reichert: Anybody want to take a shot at why we're not applying the science?

Mr. Ratliff: I think we've learned two things from it: One is that it's a very unusual system, and as Fred said, you've got old river beds covered with lava. It collects water from all over the Cascades that comes out in big, cold springs, so this water comes out not impacted. Because it's never been grayed very much and because the riparian system's in pretty good shape even with all the other abuses, the habitat is still in pretty good shape.

The other thing that we've got going on there is that we have a lot of people working very hard cooperatively on the ground, trying to fix things. I think that it's safe to say that in Oregon in general, especially in that basin, we have a much better cooperative system than what you have here. If we co-author papers between agencies and groups, we have work groups where everybody comes together and works for a day on the ground. This is orchestrated with meetings two or three times a year, and it gives us the ability to foster working relationships that actually started on the bottom.

We heard yesterday that there's a lot going on in Montana and Idaho but not much in Oregon and Washington. I think the reason there's not much going on in Oregon and Washington is that it started on the bottom and hasn't gotten to the Governor's office yet. We've switched administrations, and it's caught him by surprise. We do need to make that link because the next step in the recovery programs will be some things that are going to cost some money, like to my company. It's going to take some changes in policy to make that money come forward. Yet we had a framework already in place with people working together that probably isn't in place very well yet in Montana and Idaho.

The other thing I want to speak to you about for just a second is something I've learned after working for a power company for 24 years, and that has to do with the division yesterday of the two programs. I'd like to chastise the timber industry a little bit for allowing Bill's report to be put out in the public before it had enough peer review. Bill is one of my heroes, not only for his work for fisheries but also for his chukar hunting expertise.

And I don't want to have to be forced to criticize that report in public but it's early enough that I'm sure the next draft will look a lot different. But what that does—having it out there with some data that's not very good, like Wallowa Lake, for instance, where they've been extinct a long time (A lot of that data is old and if you applied the same standards to the Snake River salmon, for instance, they wouldn't be in bad shape either)—what that does is put the timber industry biologists in the position of not knowing what to say or where to be on the situation.

I think that report should have been pretty well scrutinized within the timber industry and fisheries community before it hit the streets. I think it would have looked a lot different, and that would help draw the timber industry into these solutions. The way it is now, it serves to divide the interests, and that's going to cause a lot of fine energy to be wasted getting it back together again, energy that could be used in these cooperative programs on the ground in the watersheds. Bull trout are in trouble in a lot of places; in some places, they are not. But we need to start working on the ground, and putting that report out too early didn't help that situation.

Mr. Reichert: I promised our panelists a quick summation. Let's do it now.

Dale McGreer: I'm not sure I can add anything that I haven't already come up with. Maybe it's part of the point you were making, but we often think of science as: We'll go do some science, here will be the facts, and that's the way it is. Well, anybody that's done any science knows that it never or very seldom works that way. Science is often contradictory. You get sets of facts here and sets of facts there. They often send different signals.

I think it's important to make sure that we have environments where we keep getting our heads together so that the weight of the science begins to reflect the truth; otherwise what you have is scientists with me-scientists and you-scientists having two different sets of facts and both saying that the other one's wrong. That is very, very counterproductive, and I would urge all of us not to do that, whether you're a scientist or politician.

Mr. Reichert: Chris, do you have anything you want to add?

Dr. Frissell: Yes, I think I will just add that I think Karen put her finger on the main problem perhaps much better than I did. I think the dysfunction that's occurring here is that there are unreasonable expectations of our science, and that is associated with a pretty poor implementation of what science is available. You know, it's natural to expect there's going to be a bureaucratic lag

between scientific knowledge and implementation on the ground, but that lag has been much more exaggerated than it needs to be. That is one of the reasons why the Forest Service and other federal agencies are losing lawsuits left and right. There is a lot of science out there that's relevant that is not getting considered.

On the other hand, I still will say that the science, as it exists now and as it's likely to occur in the next 10 years, is not going to save us. It can help, and it can help reduce the impact we're going to have on bull trout, but it is not going to tell us how we can keep maintaining early 1980s timber supply and grazing allotment stocking and have lots of bull trout coming out the other end.

Mr. Reichert: Well, we're out of time, unfortunately.

Chairman Andrus: Bruce, let me thank you for being the moderator. I'm sorry we're out of time.

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SEARCHING FOR SOLUTIONS: SOLVING THE BULL TROUT PUZZLE

PANEL FOUR: "Case Histories for Bull Trout Conservation"

Jerry M. Conley: Let's go ahead and get started in our next session. This particular panel will run until right at noon, and then we'll work on the lunch until the 2:00 panel. I think you'll find it very interesting, too.

I want to start by saying that I'm really pleased at the contribution that the Fish and Game Department has been able to make at the conference. Will Reid will be making a presentation shortly, and Dr. Bruce Rieman and Dr. Bill Platts used to work for the department. We did a good job of training those folks, you know, and it turned out really well. We're proud of them. That's one of the jobs that the department does if it is successful, and there is a lot of pressure in doing that. For example, my job in the last several years has been training the governor, the past governor of course, on lots of different activities, including certain things like pheasant hunting. That's been a real task. I'll just give you one example of how difficult it can be and how much of a politician you have to be yourself to be successful.

One of the first times I went out hunting with Governor Andrus, we were hunting down through the field. We had a pheasant jump quite a ways away from the Governor, I thought, and so I proceeded to shoot, and he shot at exactly the same time. The pheasant fell, and he beamed and said, "Gosh, nice shot there, Gov," you know, to himself. Then he turned around and looked at me, my gun is still smoking, too, of course, and I was a little bit closer to it than he was. He said, "Gosh, did you shoot?" And there was my whole career, you know, it kind of flashed in front of my eyes. I said, "Well, Governor, I did, but the bird was going down when I shot." He said, "You know, Conley, you are going to go a long ways in state government." So anyway, that's the type of thing you have to do as director.

Just a couple of comments from me on the whole subject of bull trout and a little bit of perspective maybe on Idaho's efforts. Going back to February of '94, the bull trout were moving, as we've heard, on track toward listing under the ESA. In an effort to try to avoid this train wreck, the then-Governor Andrus requested that the Fish and Wildlife Service explore options that might prevent a listing. During the past year, our department, the Forest Service, BLM, the Division of Environmental Quality, and some other state agencies have tried to comply with the direction that was given by Governor Andrus and now by Governor Batt to devise a strategy that, if implemented, would give a direction to the land managers for removal of threats to bull trout and to some of the other salmonids here in Idaho.

The thrust of our strategy places emphasis on the development of conservation agreements for local conditions. We've heard that before in the last day and a half. The strategy adopted by the Fish and Game Commission will not in itself save bull trout. The conservation of bull trout and the other inland native species is going to depend on action taken by the resource agencies and private land owners.

Conservation strategies and agreements should provide the necessary measures to protect aquatic habitats and allow resource extraction to continue—again, themes we've already heard. There must be a cooperative effort among the fish and wildlife agencies, the land managers, and industry. If we continue to debate over who's right, who's wrong, who's at fault, who's not, what's enough, what's not enough, it's certainly not going to provide protection for the habitat, which I think is the basis of all of our programs. It will lead to a resolution before a federal judge, which we are not particularly excited about in spite of some of the comments by some of the attorneys that were on the agenda. In the end, implementation and monitoring actions will provide the solution to solving the bull trout puzzle.

The panels today are going to present the efforts that they participated in to develop a program that will put the conservation efforts on the ground. So we're moving onto that stage. You've heard a lot of the background, the biology, and other aspects of bull trout management. Now, we're going to try to flesh that out for you in this panel and get down to developing a conservation strategy that will be applied on the ground and that, we hope, will do all of these things that we've been talking about.

Jeff Light is certainly an expert in the watershed analysis process. I've worked with Tom France quite a bit on other things, like wolves and grizzly bears, and he's serving on the Montana Governor's Bull Trout Roundtable. Will, I think, presents the opportunity for you to pick on one of the first, if not the first, well-developed conservation strategy. He's a principal author on that particular strategy. Greg comes at us from a systems ecologist's background and from the unique experience of working with the Northwest Indian Fisheries Commission, the Yakima Indian Tribe, and, for the past five years, with Plum Creek. So we've got a lot of good time coming up here in the next hour and a half.

We're going to start with Jeff. Greg has requested that we have Tom on before him because his talk is going to relate to some of the things and some of the work that Tom has done. So we're going to start with Jeff.

Jeff Light: Thank you, Jerry, and I really couldn't agree more

that the road to success is through partnerships. What I bring to the group today is a description of a process that we've used in the upper Klamath River Basin to develop a conservation strategy for the bull trout that occurred there. We believe that this is a successful step towards solving the problems there locally. If there is a key message from my presentation, it's that you really can solve local problems locally.

As I go through my talk, I hope you can find some of the key ingredients as to how that might come about. I'll emphasize right now that partnerships are a big part of that. So if I could have the first slide, please.

I'm only representing a very large number of folks that worked on this. I'll get into who they are later. Basically, this is where the whole upper Klamath River Basin is. You can see it's a pretty large chunk of Oregon. But you'll see about the bull trout distribution later.

First, a little background on how we got to this. I think Don referred to the Gerhart Working Groups Conference in Oregon a number of years ago, which tried to figure out what was going on with bull trout in the state and that prompted this particular effort. The Endangered Species Act was also a prompt in getting us going because, in this case, John Fortune of the Oregon Department of Fish and Wildlife's regional office was the person that brought all of us together on the issue, sometime after the two petitions had been filed for a listing of the bull trout. From that, you'll see what we were able to achieve. So ESA did help prompt our effort. I'm not sure it's needed to follow through, but we'll see about that later.

We formed a working group that included a broad spectrum of individuals from a number of different levels in the organizations that were represented. I hope you can see that this is one of the key ingredients in what we think is our success. We had a number of scientists. We had a wealth of technical input to our process here, and that was provided by fish biologists, predominantly from the US Forest Service. We had National Park Service's contributions. ODF&W, from both their regional management and their research division, contributed. We had ourselves at Weyerhaeuser, and then the Klamath Indian tribes also contributed fish biologists. That was the technical group. At the same time, we had the policy makers, some of the decision makers in the different agencies that were there from each of the forests, from the Fish and Wildlife Service at the ecosystem recovery office in Klamath Falls, and, of course, from Weyerhaeuser, too.

I'll use a broad brush here for the stakeholders of the group, which included everyone at the table, including and importantly the Sprague River Water Users and the Pacific Power & Light. There is also another group of water users there—the irrigators, the ranchers, et cetera—that are concerned with the land uses downstream of the forests and with the environment. They were principal players in our process.

We began by setting some goals. This came about very quickly, and I think helped to get us off the dime. Our first goal was to find out where we had bull trout populations to day. We wanted to maintain our existing populations through improvement of habitat or whatever was needed. Then we had the idea that these would be the refuges that could, we hoped, help to reestablish the distribution of the bull trout into some of their former realms, which was our second and long-term goal—much broader and perhaps pie-in-the-sky. For long-term persistence, we needed to do more than just keep them where they are today.

Basically, we used this schematic, which describes the problem-solving tool that we've used before in watershed analysis in Washington and Oregon and in Canada. This is our means of problem identification. We went in with our eyes open and our heads clear, trying to find out of all the different things that could influence the current condition of the fish populations in the basin and their long-term survival. This approach was honoring the idea that Bill talked about yesterday: looking at the historical record, at where we are today, and then at where we are going in the future.

In answer to Karen's question, I'd say we did use a lot of the tools that we have developed in the science to take a look at these watersheds from the technical perspectives, figuring out with the help the others on that group list, but it was mainly a technical exercise that brought the best science forward.

Then we handed that off to the managers through a series of steps describing individual watershed conditions. We said, "Here's what we think are some of the problems," and then we let them help us develop management solutions and their best tools for bringing about results. That was very, very important. So we did do the handoff of the technical to the operations, and I see that as being a key factor in our success.

Finally, we had the evaluation step, and that's the monitoring. So we set up from the get-go that we needed to not only do these things but also we needed to get feedback through both the assessment (How was our science?) and through the implementation (Did our work solve the problems that we set forth needed to be solved?). So we had that general process in mind. Let me show you what the results of the assessment were.

First, here's the situation for the bull trout in the upper Klamath River Basin today. This is half the basin that we're concerned with. We basically divided them into possibly three metapopulations of former distribution with the idea that, at one point, there may have been one metapopulation for the entire upper Klamath River Basin above Klamath Lake.

Right now, you can see this barely in the red. There is a little bitty smidgen in Three Mile Creek. The Sun Creek draining Crater Lake also has a very small population of bull trout, and that's it for that side of the basin. Then further east in the Sprague River headwaters in the Sican River, we have in Long Creek a relic population tucked up in the headwaters there. And then downstream, we have three drainages—Boulder Creek, Downing Creek, and Brownsworth Creek—that have individual populations.

All of those, if you'll note, are not continuous. They are all fragmented populations, and they are all tucked up in the headwaters. What really brought us together to begin with was that we realized that a few eggs in one basket—and a small basket at that—was pretty risky we thought. So we set about trying to find out within those watersheds what's going on for our first goal.

Here's what we looked at: timber harvest, roads, grazing, exotic species presence, fishing pressures, and irrigation. These were things that we pulled from the literature as likely to be affecting the fish populations and things that we could do something about. I'll tell you right now that the results of our analysis did not end up having the problems occur in this order.

In fact, we would say that the one ubiquitous problem that we found was the exotic species situation. We have both brook trout and brown trout in these headwater reaches, which were

everything from pristine national parks in never-been-managed conditions to some that are heavily managed for forest management as well as grazing. Across that same spectrum, we had either brook or brown trout in some of that pristine habitat along with bulls to managed watersheds with no exotic species.

The populations, as far as we could tell, were declining or gone everywhere that we found the predominant species to be brook trout. We even had, in some of the heavily managed watersheds, some of the best populations of bull trout existing today, but there were no exotic fish there. So that gave us an idea of where we might want to put some effort.

We did identify that within the realm of timber management, we had some issues from shading and stream temperature. We had some site-specific issues with roads and road crossings providing barriers, as we mentioned. We definitely identified a few of those for both adult and juveniles. We had meadows in these environments because within our forest management, we lease grazing lands. We did have meadows that were overgrazed, which we discovered and are taking steps to fix.

Fishing didn't turn out to be a big thing because the fish are not large. In these headwater reaches, you've got to drive a long way and leave some very productive blue-ribbon trout waters to get to these streams. In other words, the Wood River system is where most of the fishermen spend their time. In Klamath Basin, they didn't spend a lot of time going to these small streams. So we had some data to suggest that fishing is not the problem it is elsewhere. So that was reassuring.

Also we do have some unscreened diversions on a few of the watersheds. So you can see we have a gamut of issues going on out here. And of course, all the while, we had drought in the last couple of years, and a while back, we had Mountain Zomick explode, but we didn't deal much with that.

There were some surprises. Aside from the exotic fish species effect, particularly from the brown trout, which was pretty much a surprise, we did find other things. For example, the typical road maintenance and reconstruction season is in low-flow season, which also happens to be the time of spawning for bull trout in this area. So there was a very strong disconnect between what the fish needed and what management was doing at that time. So those were some of the simple things we learned that had a profound effect on how we manage our lands versus what we do for the bull trout. There were other surprises as well.

I want to show you now our strategy, and I'll go through it quickly and wrap up with some of the actions to date. This is a schematic of the Klamath. It's not to scale. It shows you Klamath Lake, the Crater Lake system, and then these other drainages. Basically I want to show that the teal-colored area is where the existing populations are today. This area is what we hope to secure in our Phase I through habitat improvements or land management efforts in those bull trout watersheds or drainages or sections of stream.

Then in addition, we needed to work on getting rid of the brook trout and brown trout that were co-occurring with the bull trout in those streams. Our thought was that the habitat conditions downstream of those in the purple were looking to us to be good for supporting bull trout, but currently they are overrun with brook trout and brown trout populations. So our next step was, of course, to maintain the good habitat and the good land use that was going on, do some improvements on land use, and then work on getting the bull trout restored, thereby increasing the range or at least the miles of stream occupied by pure bull trout populations in order to get us going on some recovery here.

The second phase in the process for our strategy was to then look beyond where we are today to some formerly occupied habitats. In our minds, "formerly" may have been, for example, Cherry Creek, which is over in the Klamath Lake tributary. Within the last decade, we had bull trout populations, and they blinked out beneath our nose. So we knew we had them there and that the habitat was suitable, but the brook trout have completely overrun there. Several other purple streams there reflect that same idea.

Our final phase is the pie-in-the-sky piece. These headwater populations are still separated, and, according to Bruce's work and others, are probably not going to function in the long term. We said, "Okay, under those principles, what do we need to do?" Our hope was to get either an adfluvial population restored through Upper Klamath Lake by connecting the Sun River system and the Wood River system to some of the tributaries via the lake. Then some of the main stem tributaries—the North Fork, Sprague, and others—were, we hoped, going to be restored to fluvial habitat. There is big enough water there to support some larger bull trout.

Now, you can see that gets out of the forested realm. It gets into agricultural and ranch lands. We have some good partners in that effort, but it's just the scale of the effects. We have exotic species throughout that whole area, so the scale of effects and our efforts would have to be immeasurably increased. It's daunting, but we're not entirely daunted yet.

So that's it for the slides. Let me run down a list of the actions to date that have been taken against the information we gathered. Collectively, we've done quite a bit of work. In Long Creek, we established a pilot effort to set up barriers and then eradicate the brook trout that were upstream of this barrier so as to establish a pure population there. This has also been done in the Crater Lake-Sun Creek system through Mark Betenaka's work in the past. This summer, we intend to gather information for a pilot eradication effort to begin next year, a prototype Phase I effort, to build a barrier and then reclaim that as pure bull trout population area.

The ODFW is no longer stocking exotic fish in these watersheds. That's a strong partnership effort. The bull trout is no longer able to be taken in these watersheds. We are monitoring fishing in case that starts to rise and that threat looms larger on our horizon, so we've got some good cooperation there.

Weyerhaeuser has obliterated and replanted some roads and pulled some culverts that were otherwise blocking fish passage. We have rerouted the road system to accommodate the needs of the fish and not get in the way of the transportation system.

We have also fenced our riparian efforts and basically excluded cattle from these bull trout watersheds in Phase I. That was quite an effort and required the cooperation of the ranchers and the lessees. We expect, within the next five years, to have some profound results in the habitat in meadows.

We have a rather aggressive road maintenance program in place to correct some of the sediment problems that we identified, and we have cooperative monitoring going on. So we are actually beginning to look at things like fish populations and summer, winter, and spring temperatures in order to get a better picture of what bull trout are doing and what their needs are.

To wrap this up, I'd say that, in the last couple of years, we

have really had a cooperative effort. It took a lot of work on all of our parts, and through that partnership and through the process that I described briefly to you, we think we've identified the majority of the problems. We believe that if we implement the strategy as laid out, we have a reasonable chance of at least maintaining the populations we have and some chance of restoring them to their former abundance in some places.

To me, that's successful. I define success here as meeting the needs of the bull trout. We will achieve our goals that way, but also we met the needs of the land use managers in these basins for maintaining forest management, maintaining some grazing allotments. Some of those grazing folks, we actually didn't eliminate. There were some good players that were very good at putting their cows on, getting them off, and doing what we thought was a good job. So we're letting them run to see if they can keep that up.

We feel that it's a win, win, and we're eager to get at it. But I'll tell you this: As you may have noticed, we are only at the 30 yard line. Somebody made reference to this yesterday. This plan is just the strategy, but at least we have the ball, and we've got all four downs to go. I see now as the time to implement this strategy. This is the moment when the role of the Fish and Wildlife Service could be increased immeasurably as we look for commitment and funding to pull off this ambitious effort. So that's all. Thank you.

Thomas M. France: Good morning. My name is Tom France. I'm an attorney with the National Wildlife Federation in Missoula, and I very much appreciate the invitation to speak here. I come not as an attorney or a litigant today. I come as a member of Governor Racicot's bull trout restoration team.

I've had the dubious honor of being appointed by Governor Racicot in February of 1994 to sit down with other players in the bull trout debate to see whether we couldn't come up with a restoration plan for bull trout populations in the Big Sky country. I came down early yesterday just to hear Governor Racicot's remarks. I drove faster than I should have to get down from Missoula because I wanted to hear how the Governor assessed our work. As usual when I listen to Marc Racicot, I was inspired, I was uplifted, and I learned a lot.

But I really wasn't sure he was talking about the bull trout restoration team that I was a part of because I felt a little like the unruly kid that had been spiffed up to go to church. As soon as church was over, the hair got dirty and the shirt came out. In other words, the Bull Trout Roundtable has been a difficult and often contentious process over the last year as we have tried to forge a cooperative and collaborative approach, as we have tried to invent some new rules to recover an endangered species warranted but precluded in the absence of a full listing under the Endangered Species Act and in the absence of the clear legal direction that is provided for under the Endangered Species Act.

What I appreciated the most about this opportunity to speak is that it has given me a chance to assess where we've come and where we have to go. As I look back on the process, I would suggest to you that the most important thing that our committee has done was to recognize early on that, while we had Plum Creek, the Forest Service, BPA, the tribes, and conservation interests represented, we quickly recognized that none of us knew anything about bull trout and that we were there for our policy skills. We quickly appointed a scientific committee to work in tandem with us and to provide us with information and with biological data. At this point, I think that has been our most successful step, and that is due primarily to the quality of people that have come together on that committee.

We asked biologists who are with the Forest Service, Plum Creek, and Fish, Wildlife and Parks to take time away from their regularly-assigned duties to work with us. Over the last 18 months, they have produced a prodigious amount of work. They have provided us with high quality advice. I can think of few instances in my career in environmental politics and in issue solving where I've seen the scientific committees or scientific community work better in terms of trying to harness what we know about bull trout and put it in a format that policy makers can use.

We have some of the members of the scientific committee here with us. Chris Frissell was on the earlier panel. Tom Weaver with the Fish, Wildlife and Parks Department, Brian Sanborne with the Forest Service, and Gary Watson will be speaking after I complete my remarks. They really have provided us with service above and beyond the call of duty.

One of the things that I would tell Governor Racicot regarding whether this experiment should be repeated or whether it has worked is that we've benefited terrifically from having basically volunteer time. I'm not sure that another committee working on another species or another natural resource problem could count on that kind of commitment from people that have other jobs but who have somehow managed to find the time to work with us on a bull trout recovery plan.

Now, as we have worked with the scientific community to identify problems and strategies for bull trout recovery, the weaknesses of the process have been underscored on many different occasions. The most obvious weakness of our process is that in the absence of a command and control strategy—something that might look more like a formal listing package where the Fish and Wildlife Service develops a recovery plan and then consults on actions that take place under that plan and have some sort of a quasi judicial role—we have been moving in a much more voluntary fashion. As a result, we have achieved great success on those issues that involve the least controversy. We've had much less success on those issues where there is real difference of opinion, real difference of economic interest, real difference of management authority and perspective.

I can say without hesitation that I have been the strongest advocate for bull trout recovery on the committee. I have consistently been an articulate advocate for bull trout conservation strategies. On the other hand, I don't manage lands for timber production. I don't manage lands for grazing. I have none of the responsibilities that some of the other agencies and corporate participants in the bull trout recovery effort have. We've had the most difficulty with that mix of the demands that other entities have on their time and of their land management priorities.

Part of our difficulty certainly has come from the Department of Fish, Wildlife and Parks, which has taken the lead and served as the chair of both the bull trout recovery effort and the scientific committee. As we look at Endangered Species Act initiatives, although the Fish and Game Department in Montana has come a long way, it certainly has been another reach for them to get their bureaucratic thinking around the concept of a recovery strategy and around the concept that they really needed to reorder some of their traditional priorities if we're going to have bull

trout in Montana.

One of the very frustrating and early steps that we on the committee recommended was the closure of bull trout waters to fishing. In some instances, our bull trout waters in Montana are relatively productive. Hungry Horse Reservoir has a reasonably healthy population. But all of us on the committee felt that, if nothing else, the symbolic value of recognizing there were real problems with this fish and of sending a message out to the fishing community that a restoration effort was necessary, really warranted a closure. It was very difficult for the department to depart from those traditional angling constituencies and move into the brave new world of being a conservation agency working on conservation strategies.

I think that, over the last 18 months, we have seen a learning curve from the Department of Fish, Wildlife and Parks. But early on, despite Governor Racicot's affirmative command to them to get with the program and develop a recovery plan, it was very difficult for them to really recognize that it was going to take a different ordering of agency resources, a different set of agency priorities and that simply setting brown trout and rainbow regulations and managing fishing pressure was not going to be the solution to bull trout problems in western Montana.

Similarly, we have had to work hard with our other partners, the U.S. Forest Service, the Montana Department of State Lands, and Plum Creek, which were the three major land-owning participants in our restoration team. I don't want to sugar coat it and suggest that has been easy. In part, it stemmed from bureaucratic inertia and bureaucratic ways of doing business. In part, it has been that the people that came to the table and represented these entities lacked either experience or the commitment in developing bull trout restoration strategies. I certainly think that part of it, too, was just the learning experience of putting together a collaborative strategy.

I think our difficulties can best be summarized by the annual report that the Fish, Wildlife and Parks Department put together for the governor to advise him on the progress that we have made between February and December of 1994. Perhaps the governor read a different report than the one we wrote, but I really do appreciate his optimism.

One of the things we did in this report was go through our immediate actions list. We recognized that there were long-term strategies, just as Jeff articulated them. But there were also short-term actions that we wanted to see taken, not only to begin the progress towards some sort of bull trout recovery but also to send signals that this was a serious effort and that agencies and individuals were committed to doing some things differently on behalf of this species. So some of our shorter term efforts worked well.

With a large effort into presence-absence surveys, we were able to accomplish that. In part, Plum Creek did some excellent work there and conducted sediment source surveys and drainages. We were able to move that forward last summer. We were able to reduce the use of electro fishing in bull trout water.

Then we came to voluntarily discontinuing timber harvest and grazing in streamside management zones along all streams containing bull trout. I'll just read from the department's report:

> "The Department of State Lands voluntarily defer timber harvest on SMZs containing bull trout unless the fisheries biologist has reviewed the proposal. The Department of State Lands where licensed grazing exists will review that grazing when the term permit comes up for renewal."

So the Department really did show that it was willing to change some practices.

Then we get to Plum Creek. Plum Creek believes there is a lack of scientific evidence to show that state law is inadequate. Plum Creek is studying the effect of best management practices in its streamside management zones. Then we get to the Forest Service. The Forest Service indicated that this would be illegal and would violate forest plans.

So with our major land owners throughout our first year, that was the problem that we kept running into. Either we didn't have enough data, or we had other impediments to action. The litigator in me had to recognize that some of the litigation that has gone on has been very effective, not necessarily for the species for which it was intended, but certainly for bull trout.

I had a lot of questions about the Pacific Rivers Council's injunction over the salmon recovery. As a lawyer, I thought it was an inappropriate strategy. As a politician, I think it probably set back endangered species recovery in Idaho a bit. It certainly polarized the issues in ways that I would most often choose not to, but it had an electrifying effect on bull trout recovery. The Forest Service had been saying for 12 months, "Geez, we can't do this," or "It's going to take a long time," or "It's a big battleship; it takes us a long time to turn it. Suddenly, the agency saw that it better turn and turn in a hurry. Lo and behold, in about six weeks, we had an inland-fish strategy coming out of the Forest Service. We've done in three months what the agency has heretofore proven that it had no ability to do in three years. I want to congratulate the Forest Service for finally addressing with some sense of immediacy the inland fish issues.

I will footnote that and say that I think it's unfortunate and perhaps unavoidable that big bureaucracies can't address those issues without an enormous club suddenly being hung over their heads. In this instance, I think the Forest Service looked up and said, "If we don't move with inland-fish, we risk a Pacific Rivers type of injunction in bull trout waters in Montana and Idaho." I would like to think we can find better ways of moving public policy than with that sort of club. In this instance, the club was aimed at another species, and that was salmon. But it has worked very, very well for bull trout.

As we now come to the end of 18 months of work, we are in the process of just now receiving the final reports of our scientific committee. What we're going to come up with is a package of land-use measures and of techniques for dealing with exotic species and some of the other issues that are certainly contributing to the decline of bull trout. Perhaps the logical next step of the committee is to create more committees. Our vision of where we go with this is to perfect a statewide strategy. But we recognize that, on a statewide level, we really can't give effect to that strategy.

So I listened to Jeff's presentation. What he suggested they've attempted to do in the Klamath is what we envision next happening in Montana, and we will go with a basin or sub-basin strategy. We have identified 12 bull trout basins in Montana, and our hope is to hand a tool kit to a more local group and encourage them to go forth and do good.

Right now—and I would certainly appreciate any comments that people have on this—I think we're trying to figure out the best way to make that process happen effectively. I have a lot of

reservations about turning it over to your usual public involvement committee because I see too many agendas in that kind of a venue. Right now, I'm leaning more towards a technical assistance approach where we make fisheries, biologists, and fisheries improvement and land management techniques available to land owners. We give them a menu. We give them some support and incentives to move forward with those, we try and keep the debate out of the public arena and more in the private actions, and we set forth on a five-year program in some of these basins where we can look back and see the 30 or 40 projects just as they perhaps did in the Klamath. We can then measure where we made improvement in bull trout habitat quality, and there are very definite physical steps. But that's the issue and that's the debate that we have to have over the rest of the summer.

So it has been an interesting process. I guess a year and a half isn't too long to develop a bull trout recovery plan. At the time, it seemed as though we were moving at a glacial pace, given that we were dealing with an endangered species and a known universe of management techniques and management strategies to begin a recovery process. We didn't have to invent a lot.

But I do think that Governor Racicot's approach—that of a collaborative problem-solving group with a strong state lead—is something that we can use in other endangered species ventures and certainly in other natural resource issues. I think it does take a strong commitment from elected officials to make it work. I think it takes a long time even for state agencies to recognize that they've been given new charges and responsibilities.

I'll close with just a couple of thoughts. We are going to make this process work for bull trout, and, in ten years, bull trout will be in better shape in Montana. That is the commitment that Marc Racicot has brought to the process, and no one in this room should doubt the sincerity of what he said yesterday: he's going to damn well make this thing work. He has shown his commitment throughout this process, and it gives me great confidence that, even if the restoration team takes a step back tomorrow, his shadow will appear, and he'll say, "Boys, keep it moving forward." And we will move forward. Problem-solving pressure from the politicians is extraordinarily important. Too often, the politicians are more interested in making problems than in solving them.

The other impetus that has been there for our work has been the Endangered Species Act. Whether it's the threat of listing or the presence of the act's dynamic command to go forth and recover listed species, it has proven to be a powerful force for our efforts. Governor Andrus' efforts here in putting pieces together to solve the bull trout recovery and the spirit that exists here of cooperation and learning are positive. Yet it troubles me me that, tomorrow, we're going to see in Lewiston a very divisive Endangered Species Act hearing in which politicians and interest groups are going to portray the Endangered Species Act as something that divides and something that threatens. I think this process shows something altogether different: that the Endangered Species Act can serve as a vehicle for problem-solving. I hope that we would learn more from this exercise than what we are going to learn tomorrow in Lewiston.

So those are a few thoughts on Marc Racicot's efforts and my efforts to work with him. Thank you.

Greg Watson: Good morning. I'm Greg Watson, fish ecologist for Plum Creek Timber Company. I'm based in Missoula, Montana. I asked Tom to go first and discuss the Governor's roundtable, because what I'm going to talk to you about today is primarily a scientific discussion about our research on bull trout. But I wanted you be aware of the social, political, and legal landscape that we're all working within, trying to solve this bull trout puzzle, as the governor indicates.

We're also going to be talking about other landscapes: physical landscapes and biological landscapes as Steve Mealey referenced yesterday. We're also going to be talking about hierarchies, as Bruce Rieman referenced yesterday. So I'm here today to discuss Plum Creek Timber Company's past, present, and future resource program on bull trout.

First, I'd like to thank the governor for inviting me here today to share our thoughts with you regarding solutions to the bull trout problems. The research I'd like to talk about today regards our presence-absence sampling efforts and analysis of habitat data collected during those efforts.

Since our time is limited here, I won't be able to provide you with a lot of the details. We are going to provide a copy of the draft manuscript outside by our Plum Creek kiosk, and that's available for review. This research will be probably submitted to a professional journal for review and final publication later.

Can we have the lights, please? Well, if you remember Governor Racicot's comments yesterday, he indicated that Tom Weaver knew every bull trout in the Flathead Basin by name. So we're going to see if the governor was correct.

Tom, what's this one's name?

Tom Weaver: Frank.

Mr. Watson: Frank. I guess the governor was telling us the truth.

First, I'd like to address the reason why we did some of this work that we're going to talk about. Plum Creek owns and manages approximately 2.1 million acres of timber land in the states of Washington, Idaho, and Montana. In western Montana shown here, we have 1.5 million acres. Most of our ownership is within several of the known bull trout watersheds in the states I referenced. The red and yellow lines here represent drainages where bull trout occupancy is unknown.

Since maintenance and protection of bull trout habitat will be an important component in solving the bull trout puzzle, we deemed it necessary to understand where bull trout were distributed across our ownership. In order to ensure that our management decisions were consistent with bull trout habitat protection, we felt compelled to understand also how and why bull trout responded to an array of habitat components.

A review of the existing literature indicated that no survey methodologies have been developed that were rigorous enough to meet the expected needs of land managers, i.e., to be able to detect bull trout at low population densities with a high degree of confidence. We developed a methodology in conjunction with Don Chapman & Associates here in Boise as well as the Intermountain Forest Industry Association. We wanted to use both snorkeling and electrofishing techniques because there have been arguments in the past, as Fred talked about yesterday, about the efficiency of some of these sampling protocols.

We also wanted to detect populations as low as they were known to have occurred in the literature. By interviewing some of the top bull trout scientists within the region as well as look-

ing at the available literature, we found that bull trout populations can occur in densities as low as 2.5 fish per kilometer.

Again, we wanted to have high statistical rigor in our data, and so we designed this program to have a 95 percent sampling power and accuracy or predictability in finding bull trout. At the same time, we wanted to collect habitat data on specific stream habitat characteristics for further analysis.

Throughout the sampling seasons of 1993 and '94, we implemented this methodology in streams throughout our ownership in Montana, Idaho, and Washington. We sampled tributaries in several river basins where bull trout occurred but where the distribution in those specific third or fourth order tributaries was not known.

We felt it was important to sample basins across the large area of the bull trout's range. Even though several studies have described bull trout habitat preferences, most research unfortunately has been conducted in localized areas and may not be applicable to other regions where several biological and physical parameters may differ. Hence, we wanted to see if bull trout responded similarly or differently in different areas and on what scale these responses occurred.

Once we selected our sampling sites within the stream, generally that was twelve 100-meter sampling transects per any given ten kilometers of stream reach, we went in and snorkeled the site. If bull trout were not detected via snorkeling, we went through and did a single pass shocking, and we did habitat analysis.

At each site, information was collected to describe the site factors that you'll see here at the top. Fish presence information and density information for all species, including bull trout obviously, and specific habitat components were measured.

By the end of the 1994 season, we had sampled 96 streams throughout Washington, Idaho, and Montana. Thirty-two of the streams that we sampled contained bull trout. Sixteen of these were new discoveries of bull trout. The other 16 were streams that we knew already contained bull trout, but we went in to sample in order to increase our data base and to have better statistical confidence in our comparisons. The streams where bull trout were known, we elected not to use electrofishing. We went in and did population testing, using night snorkeling to assure that we didn't have any incidental damage to those fish.

We sampled bull trout throughout all three states. Interestingly enough, we did not find bull trout in some pristine watersheds. But we did find bull trout in streams of the diverse history of land management in those areas. And we also found bull trout in streams that had been previously surveyed but did not have detections.

That leads us to two conclusions to date on this work. Land management history in any given watershed is not a reliable parameter for predicting the presence or absence of bull trout. Since we found bull trout in watersheds that have previously been sampled, past survey methodologies may not have been rigorous enough to detect bull trout, especially at low population densities.

Now, let's get into some of the data analysis. In the first level of analysis, we wanted to describe the relationships between occurrence of bull trout—that is, presence or absence—and several physical and biological variables that we measured. We conducted analysis of the data to test the hypothesis that there was no difference in measured parameters in bull trout streams and non-bull trout streams, if you will. Our analysis indicated that there were significant differences with several variables and at different scales. By site, as you can see on the left-hand side, and by habitat unit. Therefore, we rejected our known hypothesis.

The next step was to conduct an analysis to discern the most significant factors associated with bull trout streams versus non-bull trout streams. This graphic shows the results of these analyses. What I wanted you to capture here is that, throughout the results of the these analyses of all scales using both untransformed data, which are these results, and transformed data, which are just logistic or log transformations, four key variables kept floating to the top as the most significant in determining bull trout presence. Those were bottom valley top, an inverse relationship to canopy closure, an inverse relationship with overhanging vegetation, and a positive relationship with the presence or the percentage of undercut banks within any given site or habitat unit.

Well, since it's likely that these four key variables may interact to influence bull trout distribution, we tested the influence of variable interactions. Analysis indicated that the probability of bull trout occurring at a given locality increases significantly through specific interactions and that valley bottom type exhibits a strong influence upon the frequencies of the other key variables.

See, here are the variables of undercut banks displayed across valley bottom type. Undercut banks, if you remember, were an important predictor for bull trout. Well, guess what? It occurs significantly higher in the two valley bottom types in which we have also found a higher probability of finding bull trout.

This leads us to conclude that even though several variables interact to protect bull trout presence, valley bottom type is likely the most important of the variables measured. This work, combined with recent work by Bruce Rieman and Doug McIntyre suggesting that watershed size and stream width are also important factors to bull trout, brings us to the conclusion that bull trout distribution is associated with specific physical watershed features and that these features are not held in common within all watersheds. Therefore, this suggests that bull trout were not and probably will not be ubiquitously distributed through tributary watersheds as some have suggested.

The final tier of our analysis was focused on relating habitat parameters to bull trout density. In order to ascertain how bull trout populations in various watersheds respond similarly to habitat parameters, it was necessary to conduct analysis at various scales. Differential population responses to habitat complexes may occur and may result from several factors, including inter or intraspecific competition, habitat availability or basin-specific behavioral habitat selection processes. If differential habitat selection processes do occur, it will be critical for scientists and managers to understand these differences in order to fine-tune a research and management program specifically to any given stock.

Since this analysis was focused on bull trout population response, only data from the 32 streams that had bull trout were used for this analysis. To determine whether population responses to habitat were similar, we analyzed data at these three different scales: (1) compiled by stream; that is, we took the averages of populations densities as well as the habitat parameters within a given stream across all 32 streams; (2) compiled by site by individual sampling site within all 32 streams; and (3) compiled

again by site within three specific stocks or metapopulations of bull trout. Those were the Swan River Basin, the St. Joe River Basin, and the Lochsa River Basin streams that we sampled in.

Here are the results of our by stream analysis. These are significant variables that were selected by the model in descending order of importance. Maximum pool depth came out as number one. I don't know if that's too surprising. Then we get into some interesting things, and that is the coefficient of variation of stream gradient and an inverse relationship with the coefficient of variation of pool sediment depth and undercut banks, and then surface finds and adverse relationship.

I'm just displaying these pretty quickly just to go through to show the diversity of variables that came out at these different levels of analysis. Here's the density analysis of all streams by site. Again maximum pool depth comes out at number one.

Here's an example of pool depth at the combined stream analysis, and you can see there is quite a lot of scatter. But again, this was the most significant variable at this level of analysis. When we went into the Swan Valley streams only—we had five or six streams—we found that the importance of pool habitats disappeared. The number of habitat units—pools, riffles, runs, and glides per 100 meters—became the most important parameter in predicting bull trout density. That factor was followed by the correlation of variation of the maximum pool depth and overhanging vegetation.

The Lochsa was different. Inverse relationship with overhanging vegetation was the most important predictor. It was different again in the St. Joe. The coefficient of variation of undercut banks was the most important predictor. This analysis indicates that several factors influenced bull trout density in the stream survey. The contribution of these parameters to bull trout density is not consistent across all scales of analysis.

In the first two levels of analysis that considered the effects of measured variables in all bull trout streams, maximum pool depth entered the models as the most significant variable correlated with bull trout density. At the basin levels of analysis, there was no consistency of significant variables correlated with bull trout density, either within the three basin level analyses or within the analyses considering all bull trout streams. It should also be noted that none of the key variables highly correlated with bull trout distribution exhibited strong relationships with bull trout density.

The results of these analyses suggest that there is a high degree of variability in the independent habitat factors that contribute to bull trout density. The variability tends to increase proportionately with the scale of resolution used in analysis. That is, there is greater consistency of significant independent variables and hence predictive capability exhibited at coarser scales of resolution—such as valley bottom influences—than at finer scales of resolution like the ones we saw in the Swan versus the St. Joe versus the Lochsa streams.

This finding tends to support the notion that bull trout distribution and density relationships with physical variables were occurring in a hierarchial fashion. We postulate that the selection of resources by bull trout includes, in a hierarchial fashion, the geographical region, such as eco-region or geologic district; the home residence within a geographical range, such as watersheds containing minimum patch sizes or specific valley bottom types; the habitat use within the home range, such as stream reaches with more and deeper pools; and all the way down through the selection of specific items within the habitat, such as undercut banks or localized expressions of habitat structure. These criteria for selection are different at each level.

Since habitat diversity and physical responses to disturbance occur differently against ecological hierarchy, we contend that measures to protect and maintain bull trout habitat need to be site-specific and tailored within a similar hierarchical framework.

We suggest that bull trout distribution is likely an obligatory process driven by life history requirements but that population density and habitat selection are probably adaptive processes in response to a specific manner in which habitat diversity is expressed within any given watershed. Our work suggests that it's inappropriate to implement region-wide management standards for bull trout data for bull trout habitat based on extrapolation from empirical data from other areas without consideration of the hierarchical and site-specific processes that define bull trout habitat.

Therefore, watershed analysis nested within a hierarchical framework of physical processes and management standards derived from basin-specific research is essential for the protection and maintenance of bull trout habitat and populations. Indeed, all streams are not equal, and one size does not fit all.

I don't want to get too much into the conclusions because I would be preempting our vice-president. Those of you in industry know that's not a very good idea. I just want to suggest where we are going from here. We're going to continue to work with state agencies and neighboring land managers to develop localized basin-specific solutions and strategies, such as the Montana Governor's Bull Trout Roundtable, and with efforts here in Idaho and over in Washington state.

We're going to conduct research to refine our understanding of this bull trout distribution and habitat selection, especially looking at some of the influences of geomorphology on temperature and flow regimes. We're going to continue to conduct watershed analysis to develop the high degree of confidence in the production of habitat elements. Then we're going to incorporate all this information into a Graphic Information System (GIS) environment so that we can determine both where habitat information, standards, and watershed analysis techniques are appropriate for extrapolation from one area to another. Thanks.

Will W. Reid: I'd like to start by dispelling false rumors that may have been started here. I'm not what one would consider the principal author in this Idaho strategy. There were many people who played as big a role, if not a more important role, than I did. For me, it was a very good learning process. Tim Burton from the U. S. Forest Service and Rich Howard from the U. S. Fish and Wildlife Service are both here in the room today to make sure that I stay on track and don't get too far astray. If I appear to quiver or lose my place sometimes, for those of you who know me, it's not because I'm nervous. It's because this tie is choking off the blood to my brain. If I say something that may offend somebody, take this as an early apology, and it's the same excuse.

Being last on the agenda offers an opportunity to survey your entire range of emotions, take a look at what the other speakers have said, and rewrite almost everything that you had planned to say before you got started.

When we entered this conference, the first thing that we

were all given was the little blue handout. The first thing that I looked at on the inside was the list of milestones that have occurred to conserve bull trout. My first emotion was anger and then some level of rejection. Nowhere in here does it say anything about what the state of Idaho and the Idaho Department of Fish and Game have done to conserve bull trout. We have on the ground a strategy that's been adopted by the Fish and Game Commission, one that probably caused me to come here with the idea that I've got the solution, I can solve your problem for you, and I have it right here.

It was put together by an interdisciplinary interagency team, not developed in a vacuum. It has had peer review. It has been used as a template by other states that are right now receiving more credit for developing it than the state of Idaho. But I finally came to the conclusion that this was counterproductive. I do recognize a larger set of antlers when I see them, so I decided not to pursue that line of thought. So would the jury disregard the previous comments.

I was motivated by Governor Racicot's presentation. When he finished, I thought, "By God, there is a man I can vote for." For an individual that comes from a long line of hard-core Democrats and miners, who were strong union supporters, that comes as a major concession. I was motivated by recognizing that the state of Montana and the state of Idaho have the same destination in mind. We're moving in the same direction. We probably arrived at a very similar location in time, maybe by a slightly different road, but we have arrived at just about the same place in time.

I have several questions that I'd like to answer for you here today. How did the road we took differ from that of Montana? What does it mean? Why haven't we received the recognition that the Montana effort has received? As we go through this, I'll let you determine for yourself whether or not I address those issues.

On January 20th of this year, the Idaho Department of Fish and Game adopted a bull trout conservation strategy. That strategy was adopted one full year after a technical team was put in place, a team that included the U. S. Forest Service, the U. S. Bureau of Land Management, the Idaho Division of Environmental Quality, and the Idaho Department of Fish and Game.

When that technical team was put together in February, it took us 30 days to come up with this strategy. It's a strategy that's based on biology. It was a strategy that was developed under a perceived sense of urgency, a realization that we had to do something. We had to do something immediately to demonstrate that threats to bull trout are, were, and can be removed. It was designed to prevent another listing of another Northwest species, to prevent another train wreck.

In its original form, it was called an agreement, and it came out in its original form as an agreement under the leadership of the U. S. Fish and Wildlife Service. The Federal Advisory Committee Act reared its ugly head and said that we could not participate in this type of activity. The federal agencies had to bow out. At that time, we decided it was too good a strategy to abandon and that we did not want to see it die on the vine because of some obscure law that said the states and the federal government couldn't work together in the decision-making process.

So we decided to move forward with this strategy as a state agency. Because it became a state strategy rather than a federal strategy, it changed somewhat in wording and format. But the basic intent of the strategy remained consistent, and that was to develop a strategy by which we could remove threats to bull trout persistence.

The federal document, as it was originally intended, had language in it that made reference to PACFISH and that used a lot of PACFISH language. As a matter of fact, it included the PACFISH standards and guides, which, in the beginning, caused a lot of controversy and a lot of dissension. Most people failed to recognize or did not want to recognize that it applied primarily to the federal land management agencies and that it was what they needed to get through a NEPA process. We were trying to coattail on to the PACFISH EIS in an effort to remove threats to bull trout and to accomplish what the good Governor Andrus set out to do: to prevent another listing.

When it became a state issue, we removed a lot of the PACFISH language. We took the PACFISH standards and guides out. It became what we now call an assessment and a strategy. The assessment portion of our document is bull-trout specific. It lists the biology, the habitat needs, the current status, and the historical distribution. It was based on the best historical information or the best data that we could come up with at the time.

We did not attempt—and we were given instructions not to even try—to develop new data. New data is going to be developed long after this is either dead or accepted, and probably long after I'm retired from the department. We felt that we did not have the time to really get into this. It's based heavily on principles developed by the Forest Ecosystem Management Team, FEMT. It relies heavily on metapopulation principles as presented by Bruce Rieman yesterday. It relies heavily on restoration strategies developed and presented by Chris Frissell.

I must emphasize that the strategy portion is an ecosystem approach. It pertains strictly to bull trout, and it doesn't mandate anything. It offers some guidelines. It tells you once and for all what the biology of the critter is and what it needs for persistence, and it asks for a land manager's assistance. It states strongly the need for local application.

The theme we've heard throughout this entire conference is that any strategy, any standards or guides, any management practices, need to be implemented on a local basis. We can't have a one-size-fits-all. It will not work and cannot work.

So in a nutshell, what does the Idaho strategy say? It says, as Bruce (Rieman) pointed out yesterday, that we need strong healthy populations that have connectivity between those populations for a chance of refounding when you have local extinctions for one reason or another. It offers a method of performing triage, if you will. These methodologies are the ones that were presented by Chris Frissell and reflect that fact that you should be taking the least risk in those systems that are currently in the best shape. You should be placing your focus on those systems. You should maintain those systems for their ability to refound other populations that have been degraded for one reason or another. Those should be your primary focus.

Secondary focus should be on systems that you can recover for a relatively low cost and that can give you a great return or on those that are really important for returning safe connectivity between systems. It may cost you a lot to do something with those systems, but the return will be substantial. The lowest priority for restoration efforts should probably be given to those systems into which you can soak millions and millions of dollars, as we have in the past, and from which you can get very, very

little return for your dollar.

It says that we need to place emphasis on removing threats to bull trout. Again, when I say bull trout, the strategy can be applied to any inland native fish species. Such things as temperature, cover, and substrate channel stability in the migratory corridors definitely need to receive a higher level of protection.

We stressed that the local application is key, that the strategy defines biology, and that it begs for the assistance, the cooperation, and the trust that Dale McGreer asked for. It begs for the trust that we are trying to do the right thing. We are not trying to stalk resource abstraction. Hell, I live in a stick house. I eat potatoes. I have the municipal water supply to my house. It doesn't ask that we curtail any of these things. It asks for a level of involvement. It asks, do we want to do something? If so, how much are we willing to pay for it?

Again, it relies strongly on the foundations of good science, those presented by what I consider good scientists, some of the best scientists in the field: Bruce Rieman, Chris Frissell, the scientist that developed the FEMT report. Those are the pillars that support it. If those things prove to be false, then this strategy will collapse. But I think it's a good strategy right now, it is in place, and it will work. It doesn't disagree with the conclusions presented yesterday by Bill Platts. Whether I agree or not with the methodologies he used in coming to those conclusions, the basic conclusion that he came to is that the past science is lacking.

We don't have a good historical record of what happened out there. We all have blood on our hands—from the fish and wildlife agencies to the Forest Service to the grazers to the people that harvest timber—we all have some blood on our hands, and we're all going to have to look to a new paradigm. We're all going to have to visualize ourselves somewhere other than where we are right now in managing our resources.

It doesn't say there is good science and there is bad science. It reminds me of a song, if you will... (Speaker singing.) "There is no good science. There is no bad science. There is only you and me, and we just disagree."

If we can start from that premise, we have a foundation for dialogue; we have a foundation to build on; and that is the whole premise of the Idaho strategy. And by God, I think it will solve the issue of how we protect bull trout. Thank you.

Mr. Conley: Will probably did the right thing going into biology instead of singing.

If you divide four speakers into an hour and a half, it doesn't give you much time for questions. Let me throw in a couple of little thoughts here, and then I think we'll probably have to keep to the noon schedule and to forego the questions. You are going to have to talk to speakers individually.

You've heard a lot about how you've got to believe that you can solve problems locally. He said that you must have coordination, including a strong state lead, and you must have short-term actions. The short-term actions are really important because you've got to get started. You've got to get acquainted. You've got to establish a work relationship, and then the local problems start to be solved. You must also have a long-term strategy. You've got to have a broad viewpoint on it.

Frankly, my own feeling is that the Endangered Species Act works pretty well until the species gets listed. Then at that stage, the micro management comes rolling in with the federal agencies, and it starts to destroy this local approach rather than help it. That's controversial maybe, but that's my own thought. If I were going to do something about the Endangered Species Act, I'd leave it there as a threat, but I'd utilize that threat as some of the speakers have talked about: Work locally, get it done, and never let the ESA kick in.

Watersheds vary. We heard that. As biologists and scientists, we know that you need site-specific solutions. You need imaginative approaches. You need involvement from the private sector in doing high-quality research like the kind you're hearing from Greg today. When you put it all together, you can add another piece to the puzzle, and maybe add the body of the fish back in.

So with that, Governor, I'll have to turn it back over to you, and I'd like to thank our panel.

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SEARCHING FOR SOLUTIONS: SOLVING THE BULL TROUT PUZZLE

PANEL FIVE AND CLOSING LUNCHEON: "What Next for the Bull Trout?"

Chairman Cecil D. Andrus: We'll give our distinguished panelists the opportunity to make their comments, and I'm going to ask them, as they do so, to make an observation any way they choose on what has to be done in the next year. I think it's obvious from the U. S. Fish and Wildlife proposal that it appears that we will, in fact, have another year without the listing. I would like to hear from the panelists what they think we can do, should do, and must do if we're going to preclude a listing.

Now it is my opinion—and has been since we started in February of 1994 to bring about a plan to perpetuate the bull trout—that it should not be listed, and let me tell you my reasoning for that. Back in my first life when I was Secretary of the Interior, I was the chairman of the first God Squad meeting that met on the snail darter issue and the Tellico Dam issue, and then it went on to the furbish lousewort, the Dicky Lincoln Dam in Maine, and a lot of other things. But I can say from those experiences and from the experience with the salmon situation that any time you have to involve multiple federal agencies—the Department of Agriculture, the Department of Interior, the United States Congress, and others—it becomes almost impossible to come up with any plan in a timely fashion, whether it be a stabilization plan or a recovery plan, and then to implement it.

I truly believe that if we together, the men and women in this room, will work for the improvement of the bull trout and other species, we will have a stronger native fishery in all of our states and that we can do it without watching the remnants that may be in some of the tributaries disappear altogether.

I don't want to pick on Tom France, but he did say that politi-

cians usually create problems and trouble—and I'm paraphrasing of course—rather than solve them. I think that may be true with some of my former colleagues, but certainly ex-politicians don't fall in that category, particularly today. But I would say that the bull trout issue has not been up on the radar screen of all of the governors. Governor Batt is aware of it. Governor Racicot obviously is aware of it. As for Mike Lowry in Washington and John Kitzhaber in Oregon—I can't say for certain that they are aware of it. But I know each of these governors, and I will communicate with them directly at the conclusion of this conference to respectfully suggest their attention to this issue.

I have a little trouble, you know, being an ex-governor. I can't use first names anymore. I have to use titles, and I have to defer to his eminence, but I'll try my best to correspond with them and tell them, "Damn it, pay attention to this issue because if you don't, a year from now somebody might take it away from us." So I assure you, Tom, I will write those letters. I will urge them to do that.

I won't go through the bios of each of the panel members that we have because they were in the kits, and you have them. The first panel member that's going to speak to you is Governor Phil Batt of the State of Idaho. He will be followed then by Bruce Farling, who is the executive director of the Montana Council of Trout Unlimited from Missoula and is also representing the National Office of Trout Unlimited, which is a sponsor also of this conference. The third presenter will be Charles Grenier, the executive vice-president of Plum Creek Timber Company in Columbia Falls, Montana, one of the largest land owners in the area, particularly in Montana where we have the concern for the bull trout. The final member will be Jim Lyons, who is the Assistant Secretary for Natural Resources in the Department of Agriculture. Then we will have some time to open it up for comments and questions from the people here.

Let me say, as I turn it over to Governor Batt, that this man had intended to spend a little more time with us, but if you read the local newspaper, you know that the Department of Energy made a record of decision yesterday on the "temporary" repository for nuclear waste in the world and designated—as one of the infamous admirals of the world says—a "remote place," that remote place being Idaho. Governor Batt has had his hands full with that problem. He did win a court injunction from the federal district court to give us some time. Just for the record, Governor, I'd say that you've handled it very, very well. Had I been there, I would have done the same thing. I think that's another environmental problem that we have to face, and I understand that it had to be a top priority yesterday afternoon. We appreciate your being here with us, and not only do I applaud your actions, I look forward with anticipation to your comments today. Governor Phil Batt of the State of Idaho. Governor.

Governor Phil Batt: Thank you, Governor. I thought we had this straight, when you call me your eminence, you're supposed to kneel.

Chairman Andrus: Whatever it takes, Gov, whatever it takes.

Governor Batt: Well, I'd certainly like to compliment Governor Andrus for putting this conference together. He has been a person who walks the walk instead of talks the talk regarding environmental issues all of his career and all of his life. I think that he has played a large role in the progress we've made in this area we're discussing today.

I am happy with the U.S. Fish and Wildlife's action regarding the listing of this species. I think that listing would have been premature, and I think we can handle this without getting it on the endangered species list if we all work at it. I think where we are now is a result of many actions, and certainly Governor Andrus is a part of bringing about these results.

Montana's Governor Racicot, who talked to you yesterday, has taken a great lead in this matter, and I compliment the governor very much on the leadership Montana has exercised in trying to mitigate some of the factors that are causing a decline in the trout population. Plum Creek also represents what private people can do in this field and the concern that they can express in getting these things done without the heavy hand of government. I'd like to compliment them also.

Our own actions in the state of Idaho, too, have demonstrated that we are going to be strong players in the new governmental landscape, which is going to require that a lot of these actions be done by the states. It only makes sense to get them close to home and to take some of these responsibilities away from the federal government. Our own Fish and Game Department, Jerry Conley, and the others have set about to do a recovery plan for the bull trout and other species, which I think is having some results already and will have a lot of results in the long run. So we've come a long way.

For too long, we've allowed the federal government to preempt us totally in this area, the areas of concern for our water purity and our decline in fish and fowl, and we have done that more or less by default. We have a lot of federal land in the west here, and I think we've always just assumed that it would be taken care of by the federal people. They have assumed responsibility, and we have not really had the dialogue we should have. So I'm very happy to see what I think is going to be the forerunner of the way we handle endangered species being enacted in this program.

The decision process has steadily drifted away from those most closely associated with the lands and is being carried out in distant government halls. Adaptive management principles have become mired mandates, which are interpreted by policy makers many times removed from congress and the other people who make the laws. It's very well intended, and I have no criticism of the officials who carry out these mandates. They are doing the job they were prescribed to do by the law, and they have to enforce compliance with the law. But the loss of state control has given us too much of a one-size-fits-all mentality, and it doesn't apply in every area.

We have before us today an issue that gives state government a real opportunity to take control. Contrary to the anadromous fish dilemma, which is so complicated and does not lend itself to clear scientific solutions, the bull trout and the other inland fish species do lend themselves to a cause-and-effect examination, which will allow us to apply common sense solutions a lot more easily than we can in the case of the anadromous fish.

We can demonstrate that management actions by state agencies have taken giant strides to remove threats to all native species in Idaho and that we have the mechanisms in place to remove threats where they still exist. We have within Idaho the expertise, the experience, and the leadership to give guidance for such standards and, when needed, to draft rules that will protect non-con-

sumptive values that might be degraded by consumptive values.

On this issue, we firmly believe we have bipartisan agreement, and I think there is absolutely no question about that in this state. Parenthetically, I would like to say, though, that the responsibility is now on us. We've asked for it, it's here in this particular item, and just going through some motions will not solve it. We have to have some solid progress, or we are going to be listed in a year or so or whenever it comes down the line.

The bull trout conservation strategy adopted by the Fish and Game Commission is a good starting point. The strategy is intended to provide methodologies that could be applied to any inland native species and broadened to include other animals and plants. Based on the direction offered in the state agency, federal, state, and private land managers could then develop site-specific standards and guides. Although there is work to be done on our state conservation strategy, I believe it's in the best interest of the state and of the bull trout to continue in this manner.

In addition to this strategy, there are a number of other activities that allow the state to provide the capacity to manage our inland fisheries. Through the Idaho Forest Practices Act, the Idaho Department of Land has given guidance for such standards and has promulgated rules that protect water quality, fish and wildlife habitat, and forest health.

Our Idaho Division of Environmental Quality is also dedicating itself to this process and has steadily moved toward the development and implementation of standards and guides to ensure long-term protection of beneficial uses. In the last Legislature, we passed an act putting a large part of that responsibility on our DEQ. The feds haven't been totally happy with what we have done, but we are determined that we will reach the goals prescribed to us in that area.

Lemhi Basin is a prime example of what can happen when locals are given the opportunity to solve their own problems. Local water-users in the basin, with the State Soil Conservation Commission and with federal support, have implemented water conservation measures that central government would have deemed impossible. In my opinion, the Lemhi experience and others have taught us that we all—from federal agencies down to our local city and county governments—have a role to play in the conservation and perpetuation of our natural resources.

Any action implemented should consider local biological, geological, and social conditions. We at the state level have the mechanisms in place to implement actions that will have the understanding and support of local residents. I believe that most people recognize that times have changed. We cannot, will not, and have not recently logged, mined, farmed, planted fish, or recreated as we did 50 years ago. We now recognize that we are dealing with finite resources and that our resources must be protected. Giant strides have been made in resource management and implementation of actions needed to ensure perpetuation of our natural resources.

I appreciate the opportunity, Governor, to be part of this dialogue. As I mentioned before, the state stands prepared to regain its proper authority. We understand that the responsibility will be ours and that we must perform. We take that duty very seriously. Thank you.

Chairman Andrus: Thank you very much.

Bruce Farling: I give a lot of presentations to a lot of different audiences. This is the first time I've had the opportunity to sit in this type of format, a bunch of chairs. I feel like I'm on the Donahue show here.

I would like to start out by expressing my gratitude to Governor Andrus for inviting National Trout Unlimited to be one of the cosponsors of this historic event. I'm personally flattered that I've been allowed to be part of this particular panel.

One of the good things about being at the wrap-up of a conference of this nature is that you don't generally have to present a paper. You don't have to worry about overheads. You don't have to worry about slides. On the other hand, it means you had to pay attention for the previous two days so you can synthesize information and try to tie it all together. I'll try to do some of that in the next few minutes as well as try to add a few additional observations that I've made from looking at the bull trout landscape in the last four or five years.

The question we're here to answer on this last panel is, "Where do we go from here?" It seems like that's a pretty elementary thing. We all have to go down the same road to bull trout recovery. I want to try and break that down a little bit, using some pop psychology, using the 12-step process to recovery, but I'll give you guys a break. We'll only go through six.

The first step we need to take is that all the interests who care about this wonderful fish need to get over some of the denial problems that we have and that are part of the problem. I haven't heard a lot of that in the last couple of days, but I know that when I go back home to Montana, I will hear it. I will hear some denial among anglers and some among particular industry interests: timber, agriculture, mining, and recreation.

I believe the anglers, whom I represent, have actually grappled with it the best, and I think we've demonstrated that we've grappled with it the best. We've forsaken harvesting bull trout in most places across its range these days. In Montana, there is only one water where we're allowed to harvest bull trout, and that's Swan Lake. As anglers, we're funding most of the state's bull trout education efforts right now to give that extra push so people don't push this thing over the brink. It's anglers who are funding most, if not all, of the enforcement efforts for dealing with bull trout poaching in Montana and, I believe, in most of the other states.

It's anglers—and I'm particularly proud of this because it is one thing that has distinguished Trout Unlimited—who are putting money into the ground on actual restoration projects. One of my chapters in Montana, the big Blackfoot Chapter, has put $150,000 of its own money into habitat restoration projects on the ground. In fact, we've leveraged that with some federal and private sources to have about $800,000 going towards bull trout restoration.

So I feel pretty good about what anglers are doing in the denial area. I have to make a confession myself: I, too, have had to come to grips with this because I have fished for, thumped, and eaten bull trout in three different states. So I guess I've contributed to the loss a little bit. But I haven't gone through therapy on it. I haven't killed that many. I'm not that good a fisherman.

Step two. We need to come to grips with some of the myths that surround these fish. Bull trout has had a bad rep. We've been hearing it for two days. I've heard it at a lot of other conferences. You hear about it in so-called historical accounts. It's the trash fish. You caught it; you threw it up on the bank, et cetera. I'm here to tell you that, actually, it was a very important and

highly valued part of the culture of the American Northwest. It's an interesting part of the culture, and it was really a large part of the food-gathering cultures that started with the Native Americans and continued with folks who followed after them. In communities like Governor Racicot's community, Olivia, up in the Flathead of Montana, and in North Idaho, people like bull trout. I think we've got to get that message out there that this is a pretty neat fish.

Along the same line, if we're going to get the public to strongly support what we want to do for bull trout recovery, we've got to start talking about the fish in a positive vein. We always talked about it as the bull trout problem, the bull trout controversy, the bull trout issue. "Bull trout puzzle" is more neutral. Nonetheless, we don't talk about it sometimes in a positive enough vein. I'm asking all of you to leave today and start talking about it as the bull trout "opportunity" and even the bull trout "obligation," which I think Governor Racicot reminded us yesterday that we have.

Step three in the recovery process. We need to dispense with some of the side issues that I believe are hindering our main objective, and that's recovery. The biggest side issue of all is whether the fish should be listed or not. It might be moot for a year or so, and I contend that we're spending a little too much time worrying about that.

If, indeed, we're all committed to getting the job done in all four states, if all these different interests are putting together habitat conservation plans and restoration plans, we shouldn't worry about the ESA because we've got enough power among us to deal with the feds on it. What's going to happen is going to happen. It's an interestingly consistent message that we've heard from Governor Racicot right from the get-go. He said, "I'm not going to worry about whether it gets listed or not because we, in Montana, are going to bring the fish back."

In step four, I think we need to combine as many plans for species recovery as possible into one recovery effort. We can really look at bull trout recovery as an engine to ensure that a bunch of other associated species don't fall off the edge also. We're going to need the scientific community to step up to the plate on that and tell us what particular habitat needs, life history needs, and other needs bull trout have that are fairly common to some of the other species we have out here: west slope cutthroat trout, for instance, and so many amphibians. I am hoping that this Andrus center now has a very prosperous future, but what I really don't want to do is come back in a few years myself and have to go to a conference to solve the west slope cutthroat puzzle. Let's try to deal with it today.

Step five, we need to agree on the diagnosis of the problem. We need to agree on the science. It's been a pretty interesting sidelight issue at this confab. We've got some disputes out there in terms of what is the science, how good is it, what confidence levels do we need to accept before we go ahead with management based on that science. I think sometimes that we are delaying what we need to do by waiting for 95, 98, 99 percent certainty. The preponderance of the evidence relative to this fish shows us that it is indeed in trouble, so let's get on with taking our management from that science, getting the job done.

Just a couple of minor criticisms I would like to make of some folks in the timber industry: the timber industry is asking the scientific community to come up with better information, more complete information, especially relative to where these fish used to be. I contend that information is not that important. I'm still having a hard time understanding why it's important to know all the places where the fish were at one time. If it's listed, I could see it because we're going to have to describe its range, its critical habitat, and things like that. But ultimately the challenge for all of us is to focus on one thing: how many of these fish do we need, where should they be, what should be the assemblages of life histories to ensure that they persist in perpetuity. That's what we ought to focus on.

Finally on step six, we need to bite the bullet and do what needs to be done. We're going to take some meaningful interim action and final actions to stop habitat degradation, poaching, incidental mortality, and misguided fishery management. We're making some pretty good progress in that direction. I'm really happy that the Forest Service, after some prodding, is going to implement or try to implement the inland-fish strategy.

But again, when I go back to Montana, I know I'm going to hear from different interests that "you anglers aren't doing enough." Let me prevail on you for just a second and just list some of the things we have done in Montana. We've invested hundreds of thousands of dollars in habitat restoration. We've negotiated agreements with agriculture and with others for laws that provide new tools for getting water in-stream during dry months, and it's going to help in some bull trout habitat.

Montana Trout Unlimited prodded the Montana Legislature this past session into pumping two million dollars of general license money into habitat restoration, aimed primarily at native species. It was a fight. We had a real fight with our own Department of Fish, Wildlife and Parks, at least on a management level. We didn't fight with the biologists to do that because we had to take it out of a hatchery program. Those guys need to think about their priorities a little differently.

Trout Unlimited has been the principal organizer of something called the Blackfoot Challenge, which may be one of the models we want to look at for some of these watershed restoration efforts where we hand over a plan to some locals. Also, we took aim in this Legislature's legal introductions by convincing lawmakers to pass bills to prohibit the transport of live fish in Montana, a practice that has caused a problem with illegal exotic introductions. We increased state biologists' authority to go out and inspect private ponds in the state, which are mushrooming in Montana and becoming a pretty serious problem relative to exotic fish and disease introductions.

We plan on doing more. One thing Trout Unlimited does want to be very public about today is that we plan on doing more. One thing we are offering out there right now to large private land owners in the northwest, primarily timber companies, is our willingness to work in partnership on a habitat conservation plan on somebody's land out there. We'll put our resources, our technical help, our fund-raising abilities, and our volunteer help into it. We're willing to continue to build partnerships and hope some other people are, too. So we're talking to some people about it, and I hope that reaches fruition at some point.

Finally, I've been a little long winded, but, last, I want to answer Governor Andrus' challenge to give you some recommendations besides the ones I just gave you. I think we ought to let these state efforts run their courses a little bit. I heard some pretty positive things about what's going on in Idaho and Oregon today. But in the next year, let's set up some realistic goals and benchmarks against which the public can measure our progress.

I don't mean necessarily the recovery of the fish, but perhaps a goal to get X amount of research done. We're going to do A, B, C, D, something the public can measure, so we can build some confidence to go this way rather than to go to Washington, D.C. and have something essentially mandated down to us.

So with that, I really appreciate your time and being asked to come to the conference. Thank you.

Charles P. Grenier: Thank you. I'm Charlie Grenier with Plum Creek Timber Company, and thank you, Governor Andrus, for inviting us here to speak in front of this distinguished group.

After learning of Mr. Spear's announcement yesterday, I thought maybe I really needed to prepare a new speech. Some of the things he said really preempted, I thought, the issues that Plum Creek had in mind in trying to find a better way to solve bull trout problems than have a formal listing. But after I reread my speech, I think it's still valid because the science is solid, the research projects are continuing, and I think it's the right way to ensure that bull trout survive and thrive in the Northwest.

So really, how are we helping or how should we help bull trout? Although I cannot speak for the entire forest products industry in the Northwest, I think it's safe to say that the entire industry supports the goal of protecting healthy bull trout populations. While there may be a lack of data to accurately describe the condition of the bull trout fisheries today, it's also safe to say that there needs to be an agreed-upon approach to improving bull trout populations and habitat, one that makes sense to the landowners and to those who will be making the changes.

The forest industry believes that bull trout solutions must be based on sound science, be watershed or site-specific, be economically feasible, and address all the potential threats to the fish. Now there may be some tough choices to make: native fish versus introduced species—we've heard something about that; sport fishing versus, in some cases, no fishing; water for fish or water for irrigation; and, in our case, trees for fish or trees for lumber.

At Plum Creek, we decided to work on bull trout, solutions starting three years ago, so that our future management was based on data rather than dogma. One of the themes that's been developing at this conference is: Let's not go so far as to need the Endangered Species Act to have a normal listing. That was a wake-up call for Plum Creek three or four years ago as a result of the spotted owls' listing in western Washington and the resulting impacts. That listing motivated us to get out ahead as much as we could, and I think you saw today some of the research that we've been doing as a result.

I've got just a few slides to show you what Plum Creek's been doing. We've been funding several scientific research projects to understand bull trout, where they are, how they respond to variables in their environment, how our management affects those variables, and how we can manage our timber lands to enhance the habitat features that bull trout like. The announcement doesn't change that. We will continue to stay on course.

Now, here in slide one is Greg Watson and his night work. There is a snorkler in that position. I think sometimes it's a Rorschach test to see what you find in that picture. But Greg's our fish, and he spoke to you earlier this morning on the research that he and we have been doing to identify preferred bull trout habitat. That's just one example of our commitment to science and research on bull trout, and, of course, Plum Creek is adapting our management to respond to the new information from our science.

Plum Creek is identifying key bull trout watersheds on our watershed. As you can see by this slide, our two million acres of ownership coincides with many of the known bull trout distributions in the west. In Montana, Greg has identified 25 watersheds out of the 77 key watersheds named by the Governor's bull trout science team as most critical for bull trout populations. These 27 will all be inspected by our foresters this summer, looking for sediment sources. All identifiable sediment sources will be inventoried, and appropriate corrective actions will be taken this summer or as soon as practicable. The results of these surveys will be documented and reported to the Montana Bull Trout Roundtable.

We are also monitoring a number of streams for fine sediment and spawning gravel, the sediment that we all know can reduce bull trout egg survival. We're monitoring two streams in western Montana ourselves and several streams cooperatively in western Washington.

Road closures are another one of the tools that we use to reduce the potential for sediment delivery. Road closures frequently help more than just one species. In this case, it's the grizzly bear. We're also bringing old roads up to today's management standards. Here you can see a drivable dip, which serves to get the water off the road before it can make channels and deliver sediment. Here is slash piled up in a windrow on the downhill side to reduce the speed and energy of the flow so it will dissipate and be filtered. We are systematically upgrading all of our logging roads to meet today's standards for best management practices on all our ground. We are quite proud to have the best record for a large landowner in the application and effectiveness of BMPs in Montana's Department of State Lands audit in 1994.

Our fish ecologists and hydrologists are assessing stream channel stability in key bull trout watersheds. Here it's difficult to see, but that's the Swan River as it braids and goes into a wider valley situation. In those cases, an appropriate design for buffers is to be more protective than those required by state laws in order to meet site-specific needs based on topography, tree species, soil types, woody debris, canopy cover, and other factors based on the stream's needs. We like to think of buffers as smart buffers that go beyond the minimum but are required to meet the site-specific needs of the stream and its habitat.

Here's a picture in our Columbia River unit near Morton, Washington in southwest Washington. You can see a flood plain here in the foreground that's much wider than would be required under the state law. As the gradient of the stream increases and a channel becomes more defined and steeper, there is a narrower buffer. Further up the valley, there are several streams that converge, and the buffer gets wider again, a smart buffer that uses the landscape to our advantage.

We think smart buffers are a better alternative than the management-by-measurement system of 300-foot, no-entry buffers that have come out of some federal agencies. Plum Creek has also initiated and is implementing habitat enhancement projects for the bull trout in other streams to improve habitat for the future. Here's a picture of a project just done this spring with a tributary to the Little Thompson River. In the lower corner here, there is a culvert with water dumping into the tributary that runs this way. Up on the road, there is a large fill that built this road parallel to the Thompson River.

We have actually obliterated three miles of this road to remove the potential for sediment to slough off that hillside and come down into the tributary or into the river. Here's a project--and by the way, we had a permit for doing this before we put the excavator into the stream. Here's a view of the project from above. As you can see, we've obliterated the road and removed the fill area. Now I've got an "after" picture, taken from the same site as in the first picture, that shows the tributary stream, the reduction of the fill, and a planted hillside.

We also have finished projects in other areas. This one was done in the Clehallen River in the Cascades near Snoqualmie Pass. We are not correcting a forest management problem in this case. We're mitigating for a dam. Upstream log sills and root wads were provided for additional structure, and we're revegetating both sides of that creek. Although you can't see it in that picture, there are willows planted up and down both sides of this creek to provide vegetation for overwintering habitat for coho and spring chinook salmon.

These steps are being taken by Plum Creek voluntarily as a responsible landowner proactively seeking to maintain sound ecosystems as an alternative to some one-size-fits-all regulations that have failed in the past. I've got another slide on that. This is Cabin Creek. Here's a case where we're putting structure back in the stream with the logs there and large boulders to provide habitat for fish moving up that stream, resident trout populations in this case.

We've been moving on a broad front and actually with a steep learning curve to make sure land management decisions are scientifically driven and compatible with healthy bull trout habitat. Given the response by several state and private managers, we do not believe that a listing under the Endangered Species Act at this time would have brought additional resources to task at protecting bull trout. And we're happy to have the opportunity and perhaps the challenge to prove that local solutions can work.

Curt Smitch, head of the Habitat Conservation Plan program for the Fish and Wildlife Service, recently said that ecosystem management experiments currently being implemented by private landowners show more innovation than could ever be just demonstrated by the federal government alone. Surely this energy and innovation can be harnessed for maintenance and restoration of bull trout on working forests in the west.

The spotted owl experience provides a parallel situation from which we can learn a lot. In 1990, the spotted owl was listed, based on the "best available biological knowledge." Some of that knowledge was that spotted owls live only in old growth and that private lands have no owl habitat. Shortly after listing, we found out that spotted owls live and thrive in many different kinds of forests and that private landowners have a significant role in the biology and management of owls. In the five years since listing, the federal government has yet to implement a new rule for owl protection on non-federal lands.

Most of the new knowledge we have on owls has come in from volunteer efforts, from private landowners working with state and local agencies. For Plum Creek, listing of the spotted owl caused the cancellation of a land exchange that would have benefited the owl and an interruption of our routine access request, which would have resolved some of the checkerboard landownership dilemmas that we now face.

We feel as though Plum Creek was caught in the crossfire, if you will, between the Forest Service and the Fish and Wild Service when the owl was listed. So at Plum Creek, we have learned, as a lesson of listing, that we must address the issue scientifically and operationally before a listing will occur, before a listing should occur. For the federal government, we hope that these efforts will be rewarded by deferring listing to recognize state and local efforts, and we hope that process started yesterday.

The decision not to list has clearly identified the best course for bull trout. We'll have more local and state control. The states have expressed a desire to play a significant role in species protection and can better address such issues as streamside management zone protection.

Management of non-native species and cooperative watershed approaches can work. An example is our Montana State Bull Trout Roundtable. The forest products industry and certainly Plum Creek have been participating in most, if not all, of those cooperative efforts, highlighted by this panel at this symposium.

We're also seeking watershed site-specific solutions. Bull trout populations are affected in different places by different threats as we've heard throughout the conference and as shown by our research and that of the Bull Trout Roundtable. Therefore, local site-specific solutions are best achieved with more control at the state level and with state landholder involvement. One size does not fit all for bull trout solutions.

In conclusion, then, I think that the Endangered Species Act can work. We want it to work, and there needs to be flexibility to generate local and even site-specific solutions if you want to keep private interests at the table. Incentives work better than penalties, and all landowners seek certainty either with a contract or with a law that protects them as well as the species. Thank you.

Under Secretary James R. Lyons: Although I want to join in thanking Governor Andrus for his foresight and for his good timing of this conference, I don't know how you engineered a decision by--

Chairman Andrus: Skill.

Secretary Lyons: —the Fish and Wildlife Service and a decision by the Forest Service in bringing all these people to the table at the same time. It's miraculous. It's also interesting to note that you didn't really go into retirement, did you. Not at all. I also want to commend Governor Batt and Governor Racicot for the initiative and the imagination and the commitment that they've made to attempting to address what clearly is a difficult issue with foresight and imagination and with a clear commitment to try and avoid a train wreck; a very, very important step.

Before I get into my remarks, I want to ask a couple of questions in the vein of Mark Plummer's presentation last night. Some questions that I hope will--I shouldn't pre-guess the answers to these—demonstrate some of what we've come to agree to at this conference.

First of all, I'd like to see a show of hands of those who believe it would have been better yesterday if Mike Spear announced that the Fish and Wildlife Service intended to list the bull trout? Well, there always has to be some. Thank you.

In addition, how many of you believe that the federal government or the states or the public land managers or the private landowners alone can resolve the issue? The point is, I think we've come to a final agreement about what it is that we ought to

achieve, and I don't think that's a small and insignificant finding. In fact, prior to coming to this conference, I've had many discussions and many debates about the simple question of whether or not it's an appropriate goal to prevent the listing of endangered species, or whether or not we should, in fact, manage up to the brink, allow species to go over the edge, and then simply take actions to remedy what we could have prevented. I think this conference has shown clearly that the consensus is that an ounce of prevention is, in fact, worth more than a pound of cure.

That is a significant finding because it is the lesson we learned in the Pacific Northwest, and the previous presentation highlighted that. The problems, the frustrations, and the costs to private landowners, to mill workers, to loggers, and to the communities in which they reside were extremely high, and they resulted from our collective failure to address the issue before it became a crisis, before we reached the point where the options we had to resolve the issue were few.

The Fish and Wildlife Service has, in fact, given us a tremendous opportunity, an opportunity to spend a year to see if we can't determine the appropriate mechanisms in collaboration and cooperation to avoid a train wreck, to prevent a listing, and, we hope, to identify options that afford public and private landowners many more opportunities to seek their own best profit while protecting a species that we all share a great deal of concern about. This is about preventing train wrecks, and I hope we can all agree that that should be our ultimate management goal. Certain key elements came out pretty clearly in this conference, keys in trying to avoid those train wrecks. Some of those have already been covered by my co-presenters on the panel.

First and foremost, we need good sound information. Certainly we need better information about the health of the resources that we're managing, better understanding of timber inventories, water quality, and trends in fish and wildlife population that are measures of habitat quality. We need a better understanding of the effects of past management and a better understanding of what our future options may be.

To obtain this information on a species-by-species basis or to generate a new data base each time we face a management decision is insane. It's inadequate. It's inefficient. At a time when the resources of all land management agencies are in a steady decline, we simply can't afford to do it. I hope we are finally to the point where we will seek remedies based on a broader perspective, where we have the ability to step back and look at these issues in a regional context in which species cross geopolitical boundaries.

The primary contribution that federal agencies can make is to provide the information and the understanding that can help drive and can assist in the development of localized, customized, site-specific solutions that reflect resource conditions and needs. The status of the resource and the species we seek to protect can help us get the job done in a much more efficient and effective way.

Steve Mealey spoke the other day about our efforts here in Boise and the work in Walla Walla to try to understand resource conditions and trends for the entire Columbia River Basin system. That's an example of one of our efforts to try and look at the big picture and to get a handle on resource conditions so that we can understand our management options and anticipate management problems before they become crises. Clearly, we must know what we are managing before we can make sound and rational management decisions.

Second, I think it's clear that we need to improve our science. Now, scientists will always disagree. In fact, they are about as good at agreeing on things as economists. Our understanding of how forests and resources interact, how the pieces fit, and how people depend upon them can affect forest ecosystems. These are critical parts of the scientific data base that we need in order to put together systems and their functions. I'm glad to say that this work has already shed light on the causes and potential cures for a number of ills affecting the forests in this region of the country.

For example, we know that such past management decisions as excluding fire from certain ecosystems have exacerbated forest health problems. We've come to understand that problems in part created by past management decisions have to be fixed in part by new management actions: thinning, salvage sales, reduction in fuel loading, re-introduction of fire, watershed restoration, and habitat improvement. It's not a hands-off approach, but one that's hands-on and one that reflects the new knowledge that we've gained about the structure and function of these ecosystems.

The research work that we've been doing in water quality and watershed health clearly has provided us a sound foundation for the recommendations that Dave Wright spoke of just yesterday in our proposal for how we can contribute to efforts to improve bull trout habitat.

Third, I think we've learned finally that we can achieve more through collaboration than through confrontation, and this lesson was learned in the Pacific Northwest where, just two years ago, federal agencies were literally at each other's throats instead of working together for the resource that they manage jointly. We've gone through a rather slow and at times painful process, but we're working to develop relationships that can allow us to develop interagency solutions for dealing at ground level with larger resource issues. The value of collaboration extends beyond work that is done by federal agencies and extends to the work that we need to do collectively with state agencies—with Jerry's agency, with the agencies in Montana, Oregon, and Washington—to come to a common understanding with regard to the solutions that make sense to meet the needs of Idahoans and of the larger public that share in the ownership of the public lands in this state.

Collaboration is also extremely valuable and extremely important with regard to the work that we do with our private partners. The work of Plum Creek is an outstanding example of what can be accomplished in collaboration. The work they've done with regard to the northern spotted owl, cooperative agreement for the protection of the grizzly bear, and the work that they are doing with regard to bull trout illustrate the value of that collaboration. I just would raise a few questions about the decisions you've made with regard to where you buy your land, though.

Clearly, foresight on the part of companies like these will help provide greater management flexibility for the landowners, not just the Plum Creeks and the Weyerhaeusers, but also for the smaller landowners. In addition, it will provide greater flexibility for those of us responsible for managing public lands. Most important, because we have a customer, we are a supplier of goods and services, and what we do is directly affected by what happens on public land.

Fourth, it's become abundantly clear that managers must have the latitude and the flexibility to work within overall guide-

lines to make management decisions that make sense for the piece of ground that they are on. Clearly one size doesn't fit all, and I think you just heard a fed say something that Plum Creek just said not long after it was said by Trout Unlimited, who was preceded by the Governor of Idaho: "We're in violent agreement."

As we devise tools to protect watersheds, we need to build in flexibility. In addition, we clearly need to eliminate process; red tape; redundant procedures; and the incredible desire within federal agencies to have one agency check upon another so that we can reach the point of making efficient management decisions for which our managers want to be and ought to be held accountable.

We recently signed an interagency memorandum of agreement that convinced the Forest Service and the Bureau of Land Management to work with the Fish and Wildlife Service and the National Marine Fisheries Service for preventing species listings, and this strategy is already paying off. I daresay that Mike Spear's announcement yesterday regarding the potential for future listing of the bull trout is an indication of the value of the collaboration that's already occurred between the Fish and Wildlife Service and the Forest Service on the development of an inland fishery strategy that will ultimately prevent listing.

As for our immediate role, as I indicated, Dave Wright, who heads up our inland native fish strategy team, announced yesterday that we will be moving forward with a preferred alternative developed with the assistance of the Fish and Wildlife Service, one that we believe could ultimately obviate the need to list the bull trout. The environmental assessment will be available for public comment for 30 days, and we certainly invite all of you to be a part of the process.

But a key to the success of the strategy or any strategy for protecting a species with a range as great as the bull trout will be mechanisms to tie this effort to those of the states of Montana, Washington, Oregon and Idaho. Toward this end, Governor Batt, I want to tell you, we look forward to working with you and your fellow governors on a collaborative approach in dealing with this issue. In fact, I'd offer that perhaps one of our goals in this effort should be to seek some sort of cooperative agreement or a memorandum of understanding among the Forest Service, the Fish and Wildlife Service, and the four states to nail down an approach to protecting bull trout and other inland native fish species, one that meets our mutual goals and expectations.

I want to summarize by saying that I think we've come an incredibly long way in a very short time. When I first took office a little over two years ago, the crisis of the Pacific Northwest was before us, and the costs associated with that crisis continue to be felt by many in the region. Only through collaboration, through improved science, through development of better data bases, through closer working partnership among the federal agencies, the states, and private landowners like Plum Creek have we reached the point where we believe we can now rebuild a management program over there that can produce timber and recreation, good fish and wildlife habitat, all the goods and services that are demanded with those resources.

With regard to bull trout, we've laid a proposal on the table for dealing with inland native fish habitat on the national forest and the region. Our work with the states and Fish and Wildlife Service, of course, will continue. It is amazing what we have achieved, and I hope we all recognize the opportunity that is before us to work in a collaborative venture to prevent the listing of this and other species.

The Clinton administration is committed to preventing train wrecks, preventing endangered species listings where possible, and devising common sense strategies for addressing the needs of threatened and endangered species, solutions that I believe can help preserve jobs, help protect habitat, solutions that are built from the ground up, solutions that are the product of state and federal public and private collaboration, and, most importantly, solutions that preserve future options so that the needs and the values of all those with a stake in the issue can be a constructive part of the solution. Thank you.

Chairman Andrus: Thank you very much. Thank you very much, Secretary Lyons, and other members of the panel.

Ladies and gentlemen, we do have some time left for questions of these panel members, and I will welcome comments but not lengthy speeches. If you get into a speech-making situation, I will control that. But I will be flexible a little bit in your right to comment.

Yes, the lady right here. Would you stand, please, so everybody can hear you.

Audience: Governor Batt, what agency are you going to assign as the lead to develop actual agreements based on those strategies of the state or the strategies the state is adopting, and how will you ensure cooperation between the various state agencies in the execution of that strategy and the development of agreements? And how do you personally support that state agency which you assigned?

Governor Batt: Well, the lead in our collaborative arrangement will come from the Governor's office itself through my assistant Nate Fisher and others within the office. We give full credit and experience to the Fish and Game Department, which has done a lot of preparatory work in this measure. They will be a very important part of the function. We have given a lot of thought to the idea presented by Secretary Lyons here that we're dealing with such a bewildering array of federal agencies that we need to develop a council to sit down with all the management agencies and with the federal government to develop an overall policy toward these questions.

You asked for my personal involvement. I'm personally committed to preserving and restoring the endangered species within the state to the best of my ability.

What other parts of the question were there?

Audience: How will you ensure cooperation among the state agencies to support this strategy?

Governor Batt: Well, I think we have a good working relationship among all functions in state government. I'm very pleased with the new relationship that we've developed with the Fish and Game Department, the rest of the people. The Parks Department, of course, is controlled by the board. I have appointed a couple of people to that board, and I think that we have a good working relationship there already. Yvonne Ferrell is very cooperative in all these measures. The department heads and the DEQ administrator whom I appoint are subject to my direction, and I think we have a good cooperative effort. Mr. Conley can tell you that we

have been conferring on a regular basis, and I see no dissension within the Batt administration regarding these matters.

Chairman Andrus: Let me add a postscript to that because I have had a little bit of experience with these same state agencies and bureaucracies. I don't say this to be facetious, but when you ask how we will implement, sometimes you have to use just plain brute strength from time to time to get somebody's attention. But our problem historically in Idaho has not been so much internal as it has been external, caused by the lack of ability to work together with federal agencies, who because of their structure are unable to even work with their own colleagues.

But the structure is here, and every once in a while, as I said, you do have to get it on certain radar screens like that of Governor John Kitzhaber in Oregon. John has had it right up to here with budget and everything. I haven't talked to him, but I suspect it's not on his radar screen. I'll see that it is with a letter and a phone call, and I'll do the same thing with Mike Lowry. And you've heard the other two governors here today.

Other questions? I saw a hand over here. Clear in the back. Yes, Liz.

Liz Paul: I'd like to reemphasize what Bruce Farling said about the attitude to be taken approaching the opportunity to save bull trout. Hearing many times "avoiding train wrecks," "avoiding listing of the Endangered Species Act," I just got the feeling that we were fighting a law. We're trying to keep a species from going extinct; we're not trying to avoid listing. We're trying to avoid extinction. We're trying to save a species and all that that means for the Northwest. Again, I just hope that, as Bruce said, everybody can go back to their work involving the bull trout and try to rephrase it and reformulate their thinking to save the bull trout, not to avoid a train wreck.

Chairman Andrus: I missed a question in that comment. But knowing you as well as I do, that was a very appropriate comment. But let me repeat what Bruce said about not wanting to come back a year from now to talk about the cutthroat. One of the things that Mr. Lyons pointed to in his comments will, I hope, give some direction to Steve Mealey that his organization broaden the Upper Columbia River Basion EIS to a point where it will take in the native fisheries and not just one species. I think that's what I heard Jim saying. I hope Mr. Mealey will be given that instruction.

Paul Brouha: Governor, I'd like to address a question to Jim. Sometimes there is a disconnect between policy initiative that you take at the federal level and the policy you take on behalf of the agency. Clearly this is an opportunity for the agency to be accountable for applying science-based information in the field context. We have Steve, we have the regional foresters here, we have some forest supervisors in these three regions that I believe need to have a very clear signal and be held accountable for working cooperatively with these various entities to make sure that this endangered species, the anadromous species as well, are recovered. How do you plan to do that? It's fair for Governor Batt to answer that question. It's fair for you also to answer.

Secretary Lyons: Well, that's a fair question, Paul. The sole reason that we've gotten this far on the proposal that Dave spoke about yesterday is that the three regional foresters who were affected—Dave Jolley, now retired; Dale; and John over in Region 6—got together with Mike Spear, a coordination that is probably unprecedented, and began to discuss what it would take to reach an outcome that would allow us to protect species, to meet our multiple-use obligations, and to avoid train wrecks in the most productive and efficient way possible.

So I think that the will is clearly there. How do we ensure performance? We hold them accountable for achieving the goals and objectives that are set out when we reach a final approach in collaboration with the states to dealing with bull trout, the same way that they would be held accountable for the other management activities and responsibilities they have.

I think we have people who have the will and the desire. We have the science. We simply need to get to the point where we're all working together in a clear understanding of what it is we want to achieve. And I hope their attendance here at this conference reflects the fact they all understand how critically important it is to deal with this issue.

Paul Brouha: I guess it's fair play to ask Charlie Grenier the same question. Having worked adjacent to Plum Creek land in the past, I've heard the company talk very positively about doing things, and then I see on the ground some abominations at times that don't look anything like what the talk is at the top. How does Plum Creek plan to make sure that their logging supervisors and their loggers implement what they are saying at the top?

Mr. Grenier: That's a fair question. Plum Creek is one of the few, I think, who has listed its environmental principles, put them in writing, put them out for the public to review and to hold us accountable to, and that goes right down through our organization. If you have a problem with something we've done, you are free to come to me and show it to me. We think we're doing quite an excellent job in our Best Management Practices Implementation (BMPI). In Montana, we have 90 percent effectiveness, and we led the large landowner group in our ability to do logging jobs within these voluntary best-management practices.

In the past, we have been guilty of large clear cuts. I think most everybody in the room, especially Governor Andrus, is aware of that, and we got a wake-up call about that several years ago. I don't think you'll find that on our lands today. We hold our foresters accountable, and they hold our loggers accountable. I think we're doing an excellent job as reported by an independent audit by conservation people like Bruce on my right and by the various agencies who go out to look at what we're doing. So I invite people to take us to the ground and show us where we've had a problem. And we'd also like to show you places where we think we're doing an excellent job.

Chairman Andrus: A postscript again, if I might, because I join with you in having been a critic, and I reserve the right to be critical of Plum Creek in the future any time I disagree with its land management or of Weyerhaeuser or Potlatch or Boise Cascade or anyone else. But I'll tell you, there is a little stream called Clear Creek up in the panhandle of North Idaho. They just trashed it. They went in, and they had a landing in the middle of a small stream. It was the most awful mess you could ever imagine. One of them was an annual stream; the other was an occasional

stream. I just happened to have a camera along, I took some pictures, and we declared war.

But there has been a change in recent years. Plum Creek is no longer a subsidiary of Burlington but a public company in its own right, and I have seen a tremendous change in the management and the attitude. Charlie and I still have crossed swords a couple of times on some things. But so far, I've found his word to be good, and I'd like to keep testing him. You can't go back and make us all pay for the sins of the past, you know—that's not something he inherited—but you are absolutely right. It was that way before. I have not seen it that way recently, and I'm willing to give him a break until I see him screw up.

Next question? Comments? Yes, sir?

Tracey Trent: We've heard a lot in the last couple of days about the value of working at the local level and involving people on the ground and those who will be affected by management activities that are taken to improve bull trout habitat or to correct past problems. This is going to cost money, and it's going to be labor-intensive to do this and to apply it on a broad scale, not only on the bull trout issues but on many other issues. We see that the best role in government in many cases is to let the people who are affected decide, but you've got to spend a lot of time working with them so they have the information and the tools necessary. Who should pay for these efforts? In particular, I offer this question to any of the panel members: who should pay to improve bull trout habitat?

Chairman Andrus: Tracey, let me ask you a question before I pose it to them. Are you talking about rehabilitation of past practices, or are you talking about from this calendar date forward? That's like an abandoned mine lands or anything else that we have.

Mr. Trent: Well, let's simplify it and say from this day forward.

Chairman Andrus: Okay. That's simpler. Who should pay the bill? Who wants to take a shot at that?

Governor Batt: Well, I think that there are numerous players who will be involved in paying the bill. Obviously if the state assumes more responsibilities, we're going to have to appropriate more money. We've taken steps in that direction. I don't think that we've seen the end of that by any means.

The private individuals who are harvesting the timber can see enough benefits in their future that they will initiate their own practices within their own budget. The federal government will continue to be a player, probably to a lesser extent. They are going to balance that budget back there whether or not they pass a balanced budget amendment. They've got to, or they are going to wreck the country. I think that their contribution to the pot will be less than it has been, but we'll all pay it one way or another.

Chairman Andrus: Anybody else choose to make a comment off of that?

Mr. Spear: I'd comment, Governor. It's somewhat ironic that, now that we've reached the point where we can agree about the importance of having that information and that capability on the ground, we do find ourselves—at least at the federal level—reducing work forces and really limiting some of the expertise that we have out there. It's a challenge we face that we can only partially address. We're going to have to be more efficient. We're going to use technology a lot more and a lot better than we have. Region-wide assessments are a basis for making judgments about priority watersheds and priority management projects. It's a conundrum that's not easy for us to solve, but we continue to make the commitment that we will try to that job with the resources we have.

Chairman Andrus: Charlie?

Mr. Grenier: From private industry, we are paying today. We think it's in our best interest as well as that of the fish or any other species. I guess the line gets crossed when your property, your timber, or something else gets taken from you. At that point in time, then I think the broader public ends up having to pay if they feel that these things are that important. But at this point in time, we think it's our responsibility to manage for the fish and wildlife, water, and other resources that are there in addition to the timber.

Chairman Andrus: If I might make an observation there, I would say that when you draw the line, say, from this day forward, the resource extraction methodology and operation should pay that cost. We have a tremendous amount of existing problems out there that could be related to abandoned mine land reclamation proposals and other things, and the public is going to pay a substantial amount for the solutions to those problems.

Stan Hamilton is still here, the director of the Department of Lands. Stan gets a ten percent override on the timber sales, and he's been using most of that money for salaries and wages and other things to make his budget stretch because the Legislature or the Governor's office didn't give him enough money past and present. But some of those funds should be available.

Tom France: To the extent that the Endangered Species Act always envisioned a designation of candidate species, it raises a flag and sends a signal to the states that we needed to get to work on a species to avoid listing. That seems to have happened with bull trout, so wouldn't we regard this as a successful outcome under the Endangered Species Act, as a success story for the Endangered Species Act? I offer that to any of the panelists.

Chairman Andrus: Somebody take a run with it. I see that. I can belt that one over the fence. Whoever.

Mr. Grenier: Certainly I think it's a success. We came here expecting perhaps worse news, and it was a sign of, I guess, victory for a period of time or a vote of confidence that we can, as both public and private land managers, manage not only this species but other species. I think it's a great enough success that the governor can put the head on the bull trout today and we can go home to work on solutions.

Chairman Andrus: Well, let me respond to that by saying that it also gives us, as somebody said, the opportunity but also the responsibility. If the head goes on that bull trout today and then we all go home and toast by the fire, we are going to find ourselves in a situation where we invite somebody else to come in

and tell us how to do it. We cannot let that happen.

Ladies and gentlemen, I'm going to close on this note because you have in this room today, with the single exception of three of Governor Batt's colleagues who cannot be with us here today, the people that have the desire, the power, and the influence to solve this problem. They are in this room, today, together. You may not agree with one another, and you might poke sticks from here to there, but the people that can get it done are here.

So it's nobody's fault but ours if we, in fact, have to take the head off of this critter next year. Permit me to express my appreciation to each and every one of you for being here. Over my 35 years of being involved in the political and public arena, I've been to a lot of conferences, and I know how they show up and then they disappear. The rooms have been filled by the same people every meeting every hour of yesterday and today, and I want you to know I appreciate it.

So thank you very much. Don't let it die, or somebody will come along and help us take the head off of a beautiful fish. Thank you very much, ladies and gentlemen, for being a part of this conference.

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